JOHN ARCHER SCHOOL

SCOPE STUDY

HARFORD COUNTY PUBLIC SCHOOLS

OCTOBER 27, 2009

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I. INTRODUCTION

GENERAL

This report documents the existing conditions of the Bel Air Middle School, located at 99 Idlewild Street, Bel Air Maryland, and investigates three potential options to relocating the existing John Archer School to the Bel Air Campus as an addition to the existing Bel Air Middle School and how this facility can achieve the John Archer School Educational Specifications requirements. The information, proposals, and conclusions contained in this report are prepared by the architectural firm of Smolen ▪ Emr + Associates Architects of Rockville, Maryland and conducted for Harford County Public Schools (HCPS), the Board of Education of Harford County (BOE), the Maryland State Department of Education (MSDE), and the Interagency Committee on School Construction (IAC).

SCOPE STUDY COMMITTEE

The Scope Study Committee, hereinafter known as "the Committee," has reviewed and approved the proposed option for relocating the John Archer School to a new facility on the Bel Air Campus and offered their input through a series of meetings with the Design Team. The meetings convened on April 3, 2009, May 22, 2009, and August 6, 2009. The Design Team would like to thank the Committee for their input and insight offered by the Committee at these meetings. The proposed designs are a result of the recommendations, suggestions, and guidance extended to the Design Team throughout the feasibility study process.

COMMITTEE MEMBERSHIP

Deborea Montgomery	Principal, John Archer School
Mary Denton	Former Principal, John Archer School
David Ray	Teacher, John Archer School
Mark Chapman	Parent, John Archer School
Cornell Brown	Harford County Public Schools, Assistant Superintendent for Operations
Ann-Marie Spakowski	Harford County Public Schools, Special Education Department
Ronald Kauffman	Harford County Public Schools, Planning and Construction Department
Alice Burley	Harford County Public Schools, Planning and Construction Department
Jillian Storms	Maryland State Department of Education, School Facilities Architect

I. INTRODUCTION (Continued)

OBJECTIVES

The objective of this study is to investigate the scope and feasibility of relocating of the John Archer School to the Bel Air Campus as an addition to the existing Bel Air Middle School and the design considerations necessary to comply with state and local educational specification requirements in order to properly and effectively serve the present and future faculty, staff, and students of the John Archer School, as well as the community of Bel Air Maryland. A critical component to the relocation of the John Archer School to a new facility located on the Bel Air Campus will be the coordination of the various ongoing projects on the site, as well as the thoughtful consideration for future growth development of schools on the site. In addition to these major site considerations, the proposed John Archer School must also meet the requirements of all the applicable codes which govern the design. These codes include, but are not limited to, the most current publications of the International Building Code (IBC), National Fire Protection Association Life Safety Code (NFPA), and the Americans with Disabilities Act (ADA).

DESIGN TEAM

The following firms collectively represent the Design Team, whose contributions were essential to this report:

Smolen ▪ Emr + Associates Architects	Architect
Site Resources, Inc.	Civil Engineer
Columbia Engineering, Inc.	Structural Engineer
James Posey Associates	Mechanical/Plumbing/Electrical Engineer
J. Vinton Schafer & Sons	Cost Estimator

II. EXECUTIVE SUMMARY

METHODOLOGY

The existing Bel Air Middle School facility has been evaluated by the Design Team to determine the most advantageous approach towards adding the proposed John Archer School addition. The design team has also indicated the impact, if any, that can reasonably be expected by adding on to the existing facility and incorporating the necessary interior renovations and systemic improvements. Emphasis has been placed on minimizing the impact on the existing Bel Air Middle School in order to allow for the most flexibility in its future development. The evaluation is based on complying with the Draft John Archer School Educational Specifications for Harford County Public Schools, dated September 15, 2009. The study is based on the following:

- Meetings with the Committee and HCPS staff
- Analysis of the existing physical plant regarding additional capacity
- Review of the existing construction documents as provided by HCPS
- Analysis of existing and proposed site features
- Review of the John Archer School Educational Specifications for Harford County Public Schools
- Research conducted by the Design Team

EXISTING CONDITIONS OVERVIEW

The new John Archer School is to be located on the Bel Air School Campus as an addition to the existing Bel Air Middle School. The Bel Air Middle School shares the campus with the new Bel Air High School, Parks & Recreation Fields, Homestead Elementary School, and Wakefield Elementary School.

The Homestead/Wakefield Elementary Schools are currently going through a scope study to determine the best way to revitalize and modernize the two schools. The John Archer School, because of its proximity to the two elementary schools and the impact it has on the campus as a whole, is closely tied to the Homestead/Wakefield project.

The existing Bel Air Middle School is a single story masonry and glass structure built in 1959 (with additional structures built in 1993) consisting of two classroom wings, a gymnasium and specialized instruction wing, and a separate boiler and industrial arts building to the north.

II. EXECUTIVE SUMMARY (Continued)

COMMON DESIGN ELEMENTS

All three development options meet the requirements of the John Archer School Education Specification, and address the potential inclusion opportunities.

A new Cafeteria, of large enough size to accommodate both schools, is included in each development approach.

A new Media Center, of large enough size to accommodate the needs of both schools, is included in each development approach

All three development approaches place the Parks and Recreation component in a prominent location and provide for easy after-hour access.

OPTION ONE OVERVIEW

Option One encompasses the phased construction of a two new additions to the existing Bel Air Middle School and demolition of the lowest classroom wing, art wing, and administration wing of the middle school, while placing the new John Archer School on the north-side of the existing Bel Air Middle School. Vehicular access to the new John Archer School would remain the same: Idlewild Street and E. Macphail Road.

This option creates the opportunity to reorient the existing Bel Air Middle School and create a new front for the school.

Both schools share the same service entry and kitchens, and their mechanical spaces in close proximity to each other.

Because of this footprint limitation, ancillary office spaces will need to be located on a partial second floor.

OPTION TWO OVERVIEW

Option Two places the new John Archer School addition to the south-west of the existing Bel Air Middle School, which is the rear of the middle school, and makes a connection to W. Macphail Road.

Construction of the John Archer School may begin prior to the abandonment of the Homestead Elementary School, as no part of the addition encroaches on the existing Homestead Elementary School or site access to it. However, in order for the new connection to W. Macphail Road, new bus loop, and parking to be constructed, the Homestead Elementary School will have to be demolished.

II. EXECUTIVE SUMMARY (Continued)

OPTION TWO OVERVIEW (Continued)

This option requires some accommodation on the existing site and would have an impact on the existing Bel Air Middle School, but can be accommodated with a phased the construction schedule.

This option offers the most potential for inclusion opportunities between the Bel Air Middle School and John Archer School, but sacrifices security and increases the required circulation space in order to do so.

This option is dependant on the existing Storm Water Management and Sanitary Easement being relocated.

A major benefit of Option Two is the centrally located Shared Media Center and Shared Cafeteria that create nodes within the two schools that can be used to promote inclusion and interaction between student and staff bodies.

Option Two does not have the same flexibility as Option Three and seriously impacts the circulation inside and outside the new addition.

OPTION THREE OVERVIEW

Option Three places the new John Archer School addition to the south-east of the existing Bel Air Middle School, roughly in the some location as the existing Homestead Elementary School, and makes a connection to W. Macphail Road.

This option requires that the existing Homestead Elementary School be demolished.

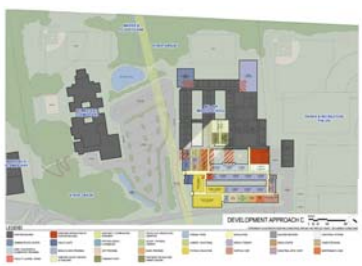
This option has the least impact on the site circulation and existing paved areas, and required the least amount of structured storm water management. However, this approach is dependant on the existing Storm Water Management and Sanitary Easement being relocated.

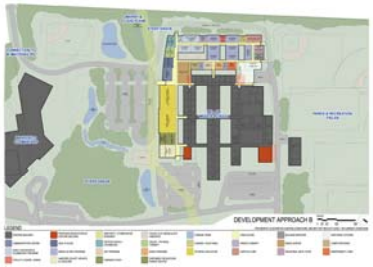
Approach A allows for the construction of the new John Archer School while preventing significant disruption of existing Bel Air Middle School.

This option allows for the most flexibility in accommodating the requirements of the John Archer School Education Specification while limiting the negative impact on the existing site and campus.

II. EXECUTIVE SUMMARY (Continued)

SUMMARY TABLE AND COST COMPARISON





	Option One	Option Two	Option Three
Existing Building (total)	159,504 GSF	159,504 GSF	159,504 GSF
New Construction (total)	144,284 GSF	140,302 GSF	136,006 GSF
Renovation (total)	7,428 GSF	8,714 GSF	10,483 GSF
Demolition (total)	22,019 GSF	5,944 GSF	0 GSF
Existing To Remain	130,057 GSF	144,946 GSF	149,021 GSF
Total Gross Square Feet	281,769 GSF	293,862 GSF	295,510 GSF
Total Estimated Construction Cost	**$37,325,000.00**	**$36,750,000.00**	**$34,550,000.00**

III. SCOPE STUDY METHODOLOGY & GOALS

SCOPE AND INTENT

The purpose of this scope study is to explore viable options for relocating the John Archer School to a new facility attached to the Bel Air Middle School located on the Bel Air Campus evaluating a series of possible scenarios that will satisfy the requirements of the Draft Educational Specifications dated September 15, 2009.

The intent of this scope study is to offer multiple options for the proposed school relocation that fulfill the educational requirements of students, staff and community. Each option will address site issues related to safe and orderly pedestrian access to the new facility as well as the other buildings on the Bel Air Campus, access to West MacPhail Road and the Upper Chesapeake Medical Center, and the impact on the existing Bel Air Middle School. The scope of work also includes a survey of the Bel Air Middle School physical plant and evaluation of the existing mechanical, electrical and plumbing systems to determine the level of impact the new facility with have on the operation of the existing school.

Meetings were held at the Harford County Public Schools Planning and Construction Office on April 3, 2009, May 22, 2009, and August 6, 2009. The Design Team analyzed the educational specification and developed several cost effective options that minimize the impact of the new facility on the existing Bel Air Middle School and address issues related to both the building addition and site. The Committee reviewed the progression of building and site concepts at each meeting. The comments and suggestions were discussed at each meeting and incorporated when found to be practical and beneficial by all in attendance.

The final concepts are presented as options in this report and were approved by the Committee.

III. SCOPE STUDY METHODOLOGY & GOALS (Continued)

METHODOLOGY

The existing Bel Air Middle School has been evaluated by the Design Team to determine the most advantageous approach to adding the proposed John Archer School as an addition. We have also indicated the impact, if any, that can be reasonably expected by adding on to the existing facility as well as incorporating limited interior renovations and/or additions to the existing Bel Air Middle School made necessary by the addition of the John Archer School. The evaluation was conducted with the intent of minimizing the impact the proposed John Archer School addition will have on the existing Bel Air Middle School as well as conditions that will need to be addressed in order for the proposed John Archer School to comply with the Draft Educational Specifications dated September 15, 2009. The evaluation is based on the following:

Review of existing construction documents provided by HCPS: The design team utilized existing documentation to understand the existing building construction and systems.

Analysis of existing site features: Existing amenities, utilities and site access were reviewed to determine if they were capable of supporting the proposed options.

Meetings with the Committee and HCPS Staff: These meetings established the needs, and goals for the study.

Review of the Draft John Archer School Educational Specifications For Harford County Public Schools: Established a thorough understanding of the requirements and objectives of the project.

Development of multiple building options and site improvement options: All viable options were explored. Each option was developed and evaluated in conjunction with HCPS Staff and the Committee.

III. SCOPE STUDY METHODOLOGY & GOALS (Continued)

The following are the goals and objectives established by the Committee to be addressed by the Design Team and HCPS staff.

BUILDING GOALS

The building addition should:

- Meet the requirements of the John Archer School Education Specification
- Have only positive impacts on the program of the existing Bel Air Middle School to remain
- Provide opportunities and access to inclusionary educational activities to all students on the Bel Air Campus
- Provide natural light throughout the new addition while preserving natural light to the existing facility.
- Minimize construction disruption for students and staff.
- Provide the safest environment possible for students and staff during construction of the addition.
- Maintain the current middle school classroom configurations as much as possible with convenient circulation connections between the addition and the existing building circulation.
- Keep circulation distance from the addition to the existing building core support elements to a minimum.
- Create new straight corridors with few turns so as to allow for visual supervision and enhanced security.
- Create a circulation pattern that ties back to the school in a “looped” configuration if possible.
- Provide separation between noisy and quiet curriculum.
- Provide adequate space to accommodate the educational program requirements.

SITE GOALS

The proposed site should:

- Provide new vehicular access to the site via West MacPhail Road when feasible.
- The MacPhail Road access should provide simple and rapid route for emergency vehicles between the John Archer School health facilities to the Upper Chesapeake Medical Center.
- Create a beneficial relationship between the existing elementary school(s) and the new facility.
- Promote new safe site circulation patterns that minimize school bus, pedestrian, and private vehicle interaction.
- Allow for maximum visual security of open spaces such as playfields.
- Allow for maximum flexibility of future expansion on the campus.

IV. EXISTING CONDITIONS

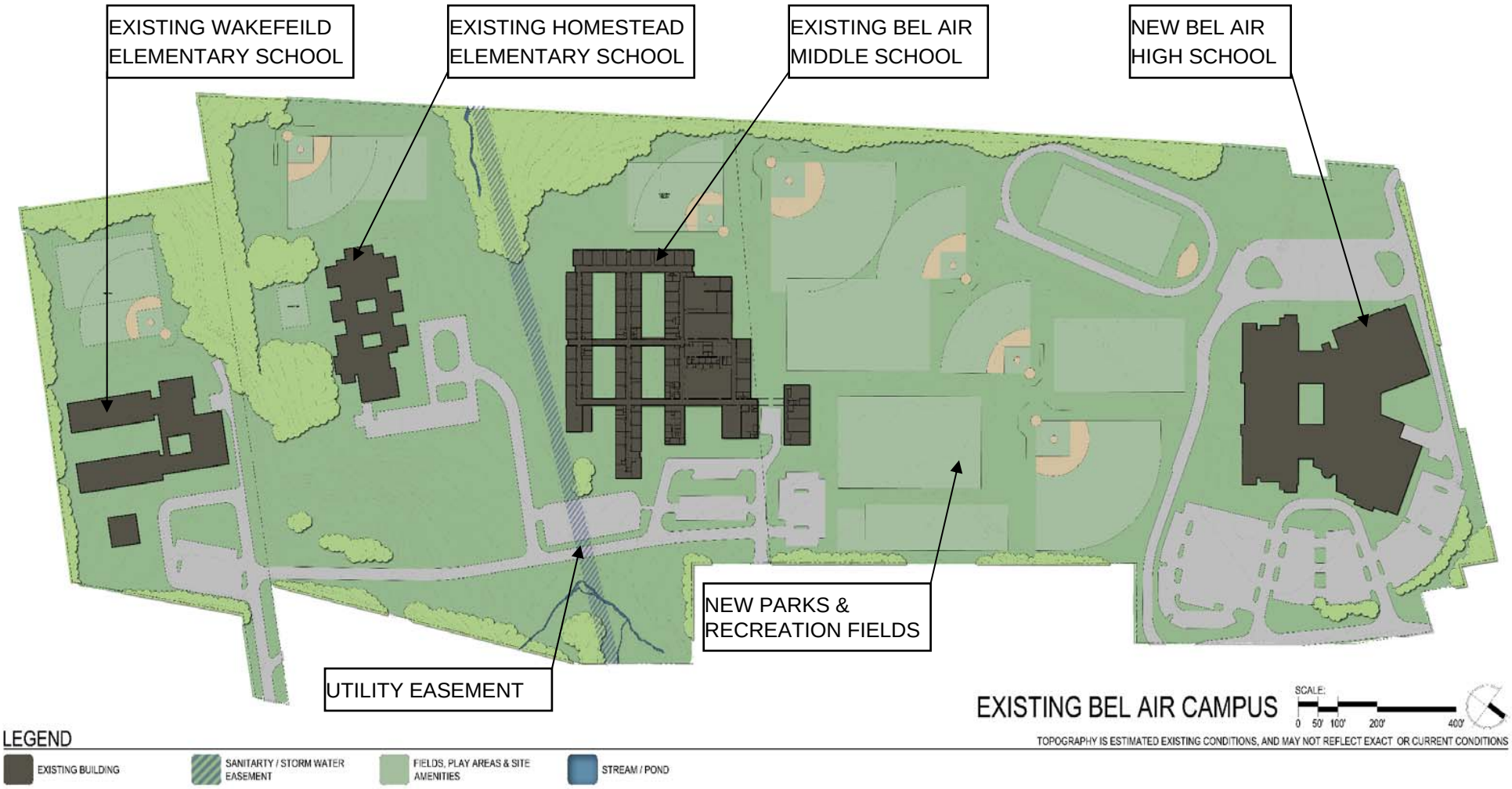
VICINITY MAP

IV. EXISTING CONDITIONS (Continued)

AERIAL PHOTOGRAPH

IV. EXISTING CONDITIONS (Continued)

EXISTING CAMPUS PLAN



IV. EXISTING CONDITIONS (Continued)

EXISTING SITE LOCATION AND CONDITIONS

The project site lies within the incorporated limits of the Town of Bel Air and is part of the larger Bel Air High School, Bel Air Middle School and Homestead/Wakefield Elementary School complex. The proposed project area contains two existing schools, Bel Air Middle School and Wakefield Elementary school, along with associated fields, parking and roads.

Most of the property surrounding the site is residential with single-family homes to the south and east and the Wakefield Manor apartments to the west. Homestead Elementary School is located adjacent to the southern edge of the site and Bel Air High School is adjacent to the north side of the site.

ZONING REQUIREMENTS

Land Use
The entire campus is zoned R-3 High Density Residential by the Town of Bel Air. The site is considered a non-conforming use and any expansion of use will require Board of Appeals approval. Because the use is non-conforming most of the minimum setbacks, yard depths and building height restrictions are not applicable.

Setbacks
The minimum building setback from adjacent residential lots is either 20 or 25 feet dependant on the number of stories for the proposed use. We recommend using 25 feet in all scenarios. The minimum rear yard depth depending on the type of permitted structure varies from 35 to 42 feet.

Building Height
Maximum allowed building height is either 30 or 40 feet dependant on the permitted use.

Parking
Parking space requirements for an elementary/middle are 1 space per 10 seats in the main assembly room or 1 space per 10 classroom seats, whichever is greater. It's not apparent if the John Archer School will fit in this category or if unique parking demands require an individual parking calculations. Each off-street parking space is required to be 9 feet wide by 18 feet long.

Parking spaces for the physically handicapped are required to meet the American's with Disabilities Act (ADA) requirements.

Parking lot aisle widths for perpendicular parking are required to be 24 feet wide.

IV. EXISTING CONDITIONS (Continued)

ZONING REQUIREMENTS (Continued)

Parking (Continued)
Although a parking management plan is not required in a residential district, the town does require a parking plan be submitted for non-residential district developments and therefore a parking plan that shows the proposed layout, circulation, signage, drainage, access, traffic arrows (if applicable), pedestrian walkways, lighting and internal and peripheral landscaping for the parking area for this project is advisable. Additionally, the plan is subject to review and approval or modification by the town.

EXISTING ENVIRONMENTAL FEATURES

The site generally slopes from the northern and southern edges of the site toward the center of the site, then toward the east to an existing stream. Most of the area around Bel Air Middle School slopes gently and contains outdoor play fields. The area around Wakefield Elementary slopes more steeply with one area at the northern corner of the site sloping quite steeply.
There are two stream/wetland areas on the site, one on the eastern edge and one on the western edge. The stream/wetland area on the western edge of the site is within the 100-year floodplain per FEMA Firm maps.

Existing wooded areas on the site are located at both of the stream/wetland areas and on the steeply sloped area at the northern corner of the site. Some smaller areas of woods are located around Wakefield Elementary and the utility easement. Most of the wooded areas have been cleared of understory vegetation.

EXISTING UTILITIES

Water
The site is served by the Town of Bel Air's municipal water system administered by Maryland American Water Works

Sanitary Sewer
The site is served by the Town of Bel Air's municipal sanitary sewer system. Additionally, in scope study Options Two and Three relocation of the existing sanitary will be necessary.

Storm Drains
An existing utility easement containing sewer and storm drain lines crosses the site from east to west connecting the two stream/wetland areas. Another utility easement is located along the northern boundary of the project site.

IV. EXISTING CONDITIONS (Continued)

EXISTING UTILITIES (Continued)

Stormwater Management

No stormwater management facilities exist in the proposed project area. Environmental Site Design (ESD) for stormwater management is required and is a design practice that encourages stormwater management through buffers, filters and other non-structural practices and discourages the use of structural practices such as ponds and structural filtering devices.

EXISTING BUILDING

The existing Bel Air Middle School is a single story masonry and glass structure consisting of two classroom wings, a gymnasium and specialized instruction wing, and a separate boiler and industrial arts building to the north.

Though the scope of the John Archer addition does not extend to revitalizing the existing Bel Air Middle School in its entirety, there are a number of key design elements of the existing school that need to be addressed in this study.

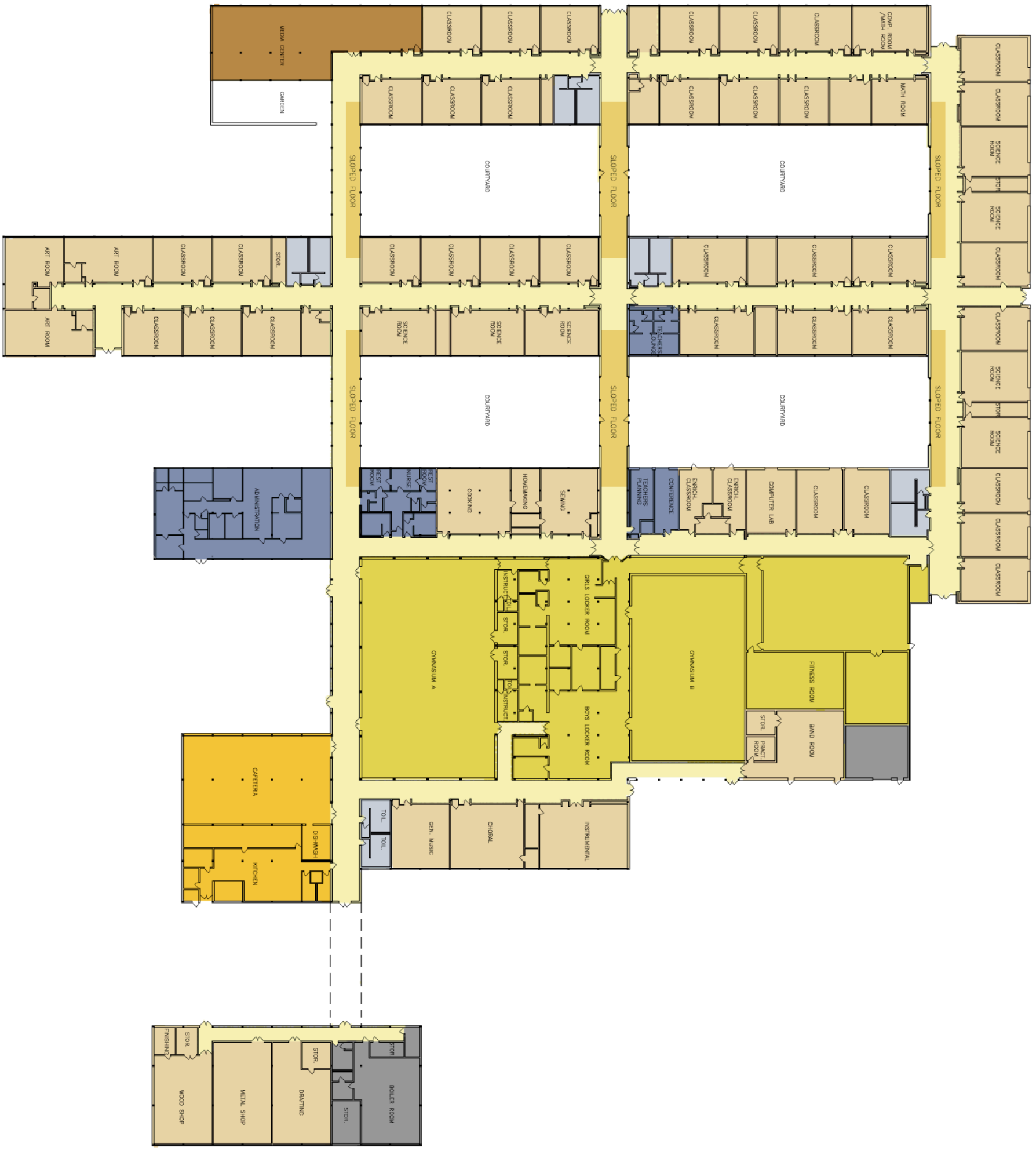
- Floor Elevation Changes and Sloped Floors: The existing middle school, though only one story, has three different floor elevations: each stepping successively lover in order to match grade. These floor elevations have a difference in height of roughly five feet and the changes in elevation are made with sloped floor corridors that do not exceed a slope of five percent and also serve to frame the school's four courtyards.

- Courtyards: The existing middle school has four large courtyards that serve as outdoor activity areas as well as naturally sloped changes in grade elevation. There are a number of trees located in these courtyards that are worth preserving. These courtyards do not have two means of egress and do not meet current life safety code requirements.

- Cafeteria Deficiency: The existing middle school's cafeteria and kitchens are inadequate for the school's current student population: forcing the school to run five lunches each day. The cafeteria is an identified inclusion area and a larger, more easily shared and accessible, cafeteria has been included in each of the proposed John Archer School additions.

- Media Center Deficiency: The existing middle school's media center and computer lab are, at roughly 3,000 SF, grossly undersized for a school of this size. The media center and computer lab are also identified as inclusion areas and a more appropriately sized media center and new computer lab are included in each of the proposed John Archer School additions.

- Non-ADA Toilets: Most of the existing gang toilet rooms in the existing Bel Air Middle School are not ADA compliant.



EXISTING BEL AIR MIDDLE SCHOOL

SCALE: 0 15' 30' 60' 120'

LEGEND

TOPOGRAPHY IS ESTIMATED EXISTING CONDITIONS, AND MAY NOT REFLECT EXACT OR CURRENT CONDITIONS

- CIRCULATION
- CLASSROOMS
- ADMINISTRATION
- GYMNASIUM & LOCKERS
- CAFETERIA & kITCHEN
- MEDIA CENTER
- RESTROOMS
- BUILDING SERVICES

IV. EXISTING CONDITIONS (Continued)

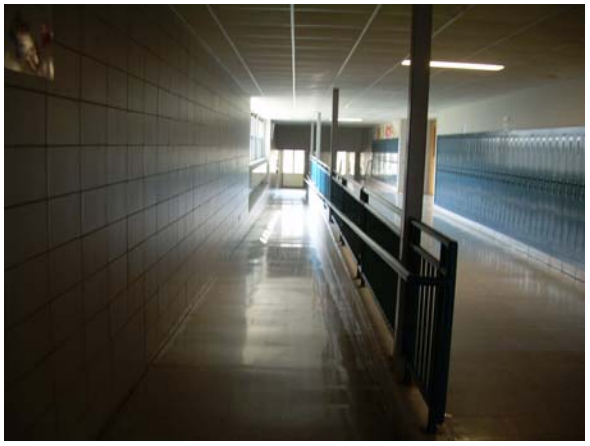
EXISTING CONDITION PHOTOS

Floor Elevation Changes

Cafeteria

Media Center

Floor Elevation Changes



Kitchen

Courtyard

IV. EXISTING CONDITIONS (Continued)

EXISTING STRUCTURE

The existing middle school building was built in 1959 with additional structures built in 1993. The original roof framing over the classroom and administration areas consists of 4 1/2" steel deck spanning between wide flange steel beams spaced from 12'-0" to 16'-0" on center. The steel beams span between steel tube columns supported on typical reinforced concrete spread footings. The floor slab is a concrete slab on grade except for a crawlspace below the corridors. The crawlspace is framed with reinforced concrete "dox" plank spanning between masonry foundation walls on continuous reinforced concrete footings. Lateral loads are resisted by moment resisting connections between the beams and columns and un-reinforced masonry shear walls.

The exterior walls are constructed of brick veneer backed up with concrete masonry units. The lateral loads are resisted by welded beam connections and non-reinforced masonry shear walls.

The framing at the multipurpose room consists of a poured gypsum roof over an acoustic form board spanning between bulb tee steel members which span between wide flange steel beams. The steel beams span between rigid steel frames bearing on reinforced concrete footings.

The 1993 addition is constructed of open web steel joists supporting a corrugated steel roof deck. The joists span from the exterior masonry bearing wall to the interior masonry bearing corridor wall. Where the structure abuts the existing building, steel tube columns support a line of wide flange steel girders that support the roof joists. The foundations for the bearing walls are continuous reinforced concrete footings.

The corridor slabs adjacent to the existing building are sloped to accommodate the change in floor elevation between the original building wings. Lateral loads are resisted by plain masonry shear walls. The infill corridors between the existing wings are constructed similarly to the rest of the addition with the exception of steel tube columns at the exterior walls of the connecting corridors. The new addition is separated from the original building by masonry fire walls.

There were observed to be cracks in the corridor slabs on grade of the original middle school building and the addition. They appear to be caused by settlement and may need to be cut out and repaired.

EXISTING MECHANICAL & PLUMBING SYSTEMS

General

The majority of the mechanical systems are original to the construction of the building, except for the boiler room equipment which was completely renovated recently. The equipment in the school is well maintained, however due to age, some equipment may need to be replaced in the near future. The following is a detailed description of the existing systems.

Heating System

Two forced draft cast-iron boilers produce heating water. The boilers were manufactured by Weil-McLain (Model 1494) and use No. 2 oil for fuel. The net output capacity for each boiler is 3,278 mbh. These boilers have excess capacity if an addition is planned for the school. The burners on the boilers are Powerflame (Model WCR4-0A). Three air-charged type expansion tanks are used. The vent flue from each boiler is connected to the masonry stacks. Combustion air is provided by a louver high in the wall (48" h x 40" w). The size and arrangement does not meet the present day CSD-1 boiler code used in the State of Maryland. Heating water is distributed to the building with two base-mounted, close-coupled; end suction pumps (lead and standby). The pumps are in good condition but have limited excess capacity. The heating plant in the boiler room is in very good condition with many more years of life expected.

Cooling System

All cooling equipment used in the building is direct expansion (DX) type. The following is a breakdown of the type of equipment and the area served:

- Typical classrooms: Window type air conditioners
- Cafeteria/Stage: Not air conditioned
- Kitchen: Not air conditioned.
- Teacher's Room: Window type air conditioner
- Media Center: Window type air conditioners
- Server Room: Not air conditioned
- Computer Room: Window type air conditioners
- Administration: Window type air conditioners

The window air conditioners are in fair to good condition. They satisfy the desire for cooling in the school but are noisy for instructional areas. The window air conditioners use more energy than a central system but are very economical to install.

EXISTING MECHANICAL & PLUMBING SYSTEMS (Continued)

HVAC System

The Classrooms are heated with unit ventilators and cooled with window air conditions as noted. The unit ventilators provide heating and ventilation from a single classroom console. The outside air quantity is not known, however based on the age of the building, it would not meet present day requirements.

The Cafeteria is heated with two large unit ventilators ducted to space with sidewall registers. We do not believe the ventilation rate of the existing units meet present day requirements.

The Kitchen is heated with a unit heater. The room is ventilated by the kitchen hood. Make-up air for the hood is from the unit ventilators serving the Cafeteria.

The Media Center is heated and ventilated with heating only unit ventilators. Window air conditioners provide cooling in the summer season.

The Administration area is heated with finned tube radiation. This is also true of miscellaneous areas such as the Teacher Rooms. Ventilation is by opening a window. Window air conditioners provide cooling for the spaces. The Health Room has a heating only unit ventilator to serve its space.

The existing unit ventilators have an economizer mode with pressure relief to exit the building through the corridor system. A new ceiling has been installed in the corridors recently and the relief openings are not visible. This arrangement to allow pressure relief into corridors is not allowed by the current code. In case of a fire, smoke from a classroom could go through the grille at the side of the room door. Relief should be changed to exit directly from the space to the exterior and the grilles next to the classroom doors blocked.

Control System

The existing control system for the school is pneumatic. The air compressor and refrigerated air dryer have been replaced recently so the unit is in very good condition. The air compressor is a duplex unit.

The number of pneumatic zones is not known since control drawings are not available. No automatic temperature control panels were visible except for emergency devices. We were informed that this school is not connected to the central system at Fort Smallwood.

EXISTING MECHANICAL & PLUMBING SYSTEMS (Continued)

Plumbing Systems

The building is served by a water service in the Cafeteria Table Storage. Service is equipped with a water meter but no strainer or backflow preventer device. There is also a small gas service used for the boiler pilots and water heater.

The domestic hot water heater is a Rudd (Model PR-75) gas-fired heater which has a storage tank with a capacity of 75 gallons and a burner with a 68 gallon per hour recovery rate. The heater is in reasonable condition. No recirculating system or pump was visible.

Based on the age of the building, tests should be run to determine if lead solder was used when the piping system was installed. Consideration should be given to replacing the piping if the lead is leaching into the water system.

The plumbing fixtures all appear to be original. The water closets are floor-mounted, urinals are wall-mounted and lavatories are individual wall hung with cold water only faucets. The toilet rooms do not meet the Americans with Disability Act (ADA) requirements.

Fire Protection System

The building is sprinklered, but the system was added after original construction. Fire service is in the Cafeteria Table Storage Room. The service is equipped with an alarm check valve but no backflow preventer. If a building addition is planned, sprinkler zones can be added to the system.

EXISTING ELECTRICAL SYSTEMS

Power Distribution

The school is fed from a pad-mounted transformer located behind the building. The service is through a switchboard located in a separate Electrical Room in the Penthouse Mechanical Room. The switchboard is Westinghouse, 277/480 volt, 3-phase, 4-wire, 1600A with breakers that feed the old switchboard, chiller, motor control center, Panel LP1 and a transformer. There is also a tap to a 600amp disconnect switch that may feed the new unit ventilator panelboards.

The main switchboard was installed along with the building addition around 1994 and appears to be in good condition. The additional panelboards for the unit ventilators were installed in 2007.

EXISTING ELECTRICAL SYSTEMS (Continued)

Power Distribution (Continued)
The older part of the building has a Westinghouse switchboard in the old main electrical room. This switchboard was original to the older part of the building and should be replaced. The switchboard feeds panelboards throughout the older part of the building. These panelboards are also old and reaching the end of their normal life.

Classrooms typically have 3 receptacles, one in the front, one in the rear, and one receptacle above the counter. Some classrooms also have plug mold along one or more of the walls.

Lighting
Fluorescent lighting is used throughout the school. Classrooms and offices have surface lensed or louvered, pendant-mounted fixtures. Corridor lighting is also surface mounted fluorescent lights. The Back Gymnasium uses surface 2' x 4' fluorescent fixtures. The Front Gym and Main Gym use metal halide fixtures. The Stage area has fixed spotlights and fluorescent lights around the stage. Surface 1' x 4' fluorescent fixtures are used in the Cafeteria.

Fire Alarm System
The fire alarm system consists of a series of panels of various age and conditions. The newest panel is an FCI 7200. This panel is a low-voltage addressable system that is expandable. There is also a Simplex 4010 communicator, a WSA graphic annunciator, an old SH Couch panel and an old annunciator. The fire alarm panels are all located in the assistant principal's office. Notification devices are horns and strobe lights. There is an insufficient number of devices to meet current codes.

Intercom System
The school intercom is a Dukane system, located in the storage room adjacent to the Main Office. It has the capability to perform selected local calls to classrooms or paging throughout the school. Each classroom has a speaker and a call switch. Expandability of the system is questionable.

Telephone System
The telephone system is a separate key system for telephones in the main office. The phone switch is located in the storage room near the main office.

EXISTING ELECTRICAL SYSTEMS (Continued)

Cable TV System

The school has TV outlets in every classroom as part of a combination audiovisual outlet. Classrooms have a wall of ceiling-hung televisions and some classrooms have ceiling mounted projectors with supplemental speakers.

Security System

The school has a security system throughout. Keypads are used to arm and disarm the system. Motion detectors are used to activate the system. CCTV cameras are also present at the entrance, main office, media center, and other key locations. A remotely controlled lock serves the control for the main entrance to the school.

Data Wiring System

A Cat 5 wiring system has been installed throughout the school. This system provides connectivity for the Computer Room, Media Center, offices and classrooms. Each typical classroom has at least two multi-outlet boxes, one at each end of the room for student and teacher computer locations. Each outlet has 2 or 3 data ports and one voice port. Computer power for computers using these outlets has not been provided. The hub equipment is located in the Media Storage room near the Media Center. The rack equipment includes switches, UPS, servers, and patch panel equipment. The Media Storage room also serves as the charging locations for laptop carts.

V. DESCRIPTION OF OPTIONS

GENERAL

This Scope Study investigates the relocation of the John Archer School to the Bel Air Campus as an addition to the existing Bel Air Middle School and provides three (3) development options for the location and design of the new John Archer School within the context of the campus. These three options to the development of the new John Archer School have been investigated by the Design Team, with the input of the Scope Study Committee and Harford County Public Schools.

Each development option meets the requirements of the John Archer School Education Specification. However, the location of the addition and its internal relationships with the existing Bel Air Middle School, and relationship with the campus as a whole, has a significant affect on the layout of the new John Archer School and an impact on how successfully the plan accommodates the needs of the school.

Particular attention has been paid to the affect that each development option has on the surrounding site and campus as a whole, and the relationships and opportunities for inclusion that each approach creates.

Option One places the new John Archer School addition to the north-east of the existing Bel Air Middle School, which is the front of the middle school, but does not make a connection to W. MacPhail Road.

Option Two places the new John Archer School addition to the south-west of the existing Bel Air Middle School, which is the rear of the middle school, and makes a connection to W. MacPhail Road.

Option Three places the new John Archer School addition to the south-east of the existing Bel Air Middle School, roughly in the same location as the existing Homestead Elementary School, and makes a connection to W. MacPhail Road.

COMMON DESIGN ELEMENTS

<u>Design elements common to all three options</u>

- All three development options meet the requirements of the John Archer School Education Specification, and address the potential inclusion opportunities by locating these spaces so as to be easily accessible by both student bodies.

- A new Cafeteria, of large enough size to accommodate both schools, is included in each development option. This cafeteria is always centrally located and easily accessible by both John Archer School and Bel Air Middle School students.

V. DESCRIPTION OF OPTIONS

COMMON DESIGN ELEMENTS (Continued)

Design elements common to all three options (Continued)

- A new Media Center, of large enough size to accommodate the needs of both schools, is included in each development option. This media center is always centrally located and easily accessible by both John Archer School and Bel Air School students.

- All three development options place the public and evening use components of the John Archer School program; the physical education component and natatorium, in a prominent location on the site and provide independent access to the component and the potential to isolate the component from the rest of the school for after hour and weekend use.

- All three development options have been designed around a core of two- (2) and four- (4) classroom "clusters" that allow for support spaces of each classroom to be easily shared and to promote the interaction of students and staff using the space.

- Each development option has included courtyards for use as secure outdoor inclusion activity areas and a means of providing both daylight and views to the classroom core.

Building Structural System

The roof system will be composed of galvanized, corrugated steel deck spanning between open-web steel bar joists and wide-flange steel beams. The deck will be acoustic type in the gymnasium area. The joists and beams will be supported by reinforced masonry bearing walls designed for the loads and heights required. In some locations steel girders and columns may be required in lieu of masonry walls. The exterior walls will be brick veneer with masonry block back-up. The bearing walls and columns will be supported on conventional spread concrete footings reinforced to resist the design loads. Lateral seismic and wind loads will be resisted by reinforced masonry construction. The building additions and connections to the existing middle school will be structurally isolated from the existing building.

Mechanical and Plumbing Recommendations

During the design development phase, systems selection and energy studies will be conducted to confirm final selection of systems. HVAC systems to be considered include four-pipe fan coil unit and rooftop VAV systems. An option for a geothermal water source heat pump system will also be explored during design development. The following HVAC system description is what we believe will be the base system. Mechanical systems for the John Archer School will be designed so they can operate independent of the existing Bel Air Middle School.

V. DESCRIPTION OF OPTIONS

COMMON DESIGN ELEMENTS (Continued)

Mechanical and Plumbing Recommendations (Continued)

Heating and Cooling Systems

Two cast-iron boilers will be installed in the boiler room with one set of heating water pumps (lead-lag) capable of serving the entire building. Boilers will be gas-fired. Chilled water will be produced by a water-cooled chiller located in the boiler room and a cooling tower on the roof. A three pump set will be provided: one pump for building chilled water, one pump for condenser water and one pump as a stand-by pump for either system.

HVAC Systems

The building will be served by multiple rooftop air-handling units equipped with heating water coils and chilled water coils, except for the administration unit which will have direct expansion (DX) cooling. The building air-handling unit zone and types of units are as follows:

- Infant, toddler, pre-school and elementary school area: rooftop VAV air handling unit with fan powered VAV terminals for individual room control.
- Art, music, and computer room: rooftop VAV air handling unit with fan powered VAV terminals for individual room control.
- Administration area: rooftop VAV unit with DX cooling. Unit serves fan powered VAV terminals for various offices.
- Boys and girls locker rooftop: 100 percent outside rooftop unit with energy recovery.
- Therapy tank: dehumidification unit design specifically for pool applications.
- Nursing, speech and psychology offices: rooftop VAV air handling unit with fan powered VAV terminals for individual room control.
- Technology area: rooftop constant volume air handling unit for individual room control.
- Greenhouse: fin tube heating and cooling with dry coolers designed specifically for greenhouse use. Natural ventilation systems will also be provided.
- Cafeteria and physical education rooms: rooftop constant volume air handling unit.
- High school area: rooftop VAV air handling unit with fan powered VAV terminals for individual room control.
- Middle school area: rooftop VAV air handling unit with fan powered VAV terminals for individual room control.

Mechanical exhaust systems will be provided for toilet rooms, storage rooms and other special areas based on code requirements.

The temperature control system for the building will be a direct digital control (DDC) system which will enable the school board to operate the building remotely for the most economical, and energy saving procedure. System will be BACnet based to allow for material flexibility in the future.

V. DESCRIPTION OF OPTIONS

COMMON DESIGN ELEMENTS (Continued)

Mechanical and Plumbing Recommendations (Continued)

Plumbing System

All plumbing fixtures will be institutional grade with a 1.6 gallon per flush valve on water closets and 0.5 gpm restrictors on faucets. Lead free water coolers will be specified. Plumbing fixtures will be installed with provisions for the Americans with Disabilities Act (ADA).

The underground sanitary and storm water piping will be hub and spigot cast iron. Above grade sanitary and storm water piping will be no-hub cast iron. Interior water piping will be type "L" copper with no lead solder.

A gas-fired water heater will be installed. This will serve the entire John Archer School and will be equipped with hot water circulator and expansion tank. A thermostatic water mixing valve will be installed on the hot water supply to all areas except the kitchen. Water temperature will be maintained at 110 degrees except in kindergarten and pre-school area which will be further regulated down to 95 degrees.

Fire Protection System

Fire service will be supplied from county mains. The sprinkler service and all zone valves will be located near the boiler room area. Multiple sprinkler zones will be provided for the building. The sprinkler system will be hydraulically designed to minimize pipe size requirements and provide a more economical distribution system for the building.

Energy Statement

Energy conservation is an important goal for the design of the new John Archer School. Many conventional energy saving techniques are incorporated into the building to achieve energy efficiency. The completed facility will meet current energy requirements of ASHRAE 90 and the State of Maryland energy index. The following are features incorporated into the design.

- Thermal break aluminum windows with insulating glass to reduce energy consumption.
- Carefully detailed and located insulation and weatherstripping.
- The main building entrance has an air lock vestibule.
- HVAC system is controlled by the latest generation of computerized energy management equipment.
- HVAC system is divided into multiple zones for efficient year-round and after-hours community use.
- Light switching is zoned by lighting fixture layout in rooms to minimize energy consumption.
- Energy saving lamps and ballasts will be specified in all lighting fixtures.

COMMON DESIGN ELEMENTS (Continued)

Electrical Recommendations

Power Distribution

It is recommended that the existing electrical service and distribution system be upgraded to provide sufficient capacity for the facilities. This upgrade should include a replacement of the existing utility transformer and service switchboard with units of increased capacity. New space will be required for the replacement switchboard to provide code required accesses and clearances. The replacement switchboard will be configured with separate distribution paths for both the existing middle school and the new John Archer facility

New distribution and branch circuit panelboards are required to serve areas of new construction. This distribution system should be fed directly from the replacement switchboard.

Separate panelboards, dedicated to computer receptacles, are required in all new areas. Additional switchboard capacity for computer power systems in all other areas of the building is recommended.

Existing panelboards and feeders in the middle school may remain.

Lighting

An energy-efficient lighting system is recommended throughout the new facility. Standard classroom lighting should include HCPS standard recessed 2' x 4' fluorescent fixtures with lenses. Parabolic type fixtures should be used in offices and the Media Center. High-bay fluorescent lighting should provide lighting in the physical education areas.

Emergency egress lighting should be provided by battery powered emergency and exit lights located along paths of egress (defined by an Architectural code study)

Lighting fixtures in the existing facility will remain.

Fire Alarm System

The existing addressable fire alarm system should be expanded to serve the new areas of construction. New devices should include manual pull stations, smoke detectors, audible and visual notification devices. It is recommended that an alphanumeric annunciator, located at the building entrance, replace the existing unit. The annunciator should include a static floor plan of the entire facility.

V. DESCRIPTION OF OPTIONS (Continued)

COMMON DESIGN ELEMENTS (Continued)

Electrical Recommendations (Continued)

Security System

It is recommended that a new security system panel will replace the existing unit. Existing security system components should be reconnected to the new control panel to the greatest extent practical. Existing devices that are incompatible with the new control panel must be replaced.

In areas of new construction, system components should include motion sensors, door switches, and activation keypads.

Intercommunications System

It is recommended that a new head-end intercom system, located in the media center storage area, replace the existing unit. System components located in the existing middle school can be reconnected to the new head-end unit using existing system wiring.

In the areas of new construction, typical classrooms should feature speakers and call switches. Master clock display units and additional speakers should be provided in the corridors.

Video Cabling System

New video cabling system distribution equipment should be located in the new media center. This distribution equipment should connect to the existing video distribution point by a single distribution “trunk” cable. The new distribution frame should serve all classrooms in the area of new construction.

Voice and Data Cabling System

A new voice and data cabling system distribution frame should be located in the new media center. This distribution frame should connect to the existing distribution frame by fiber optic cable. The new distribution frame should serve all classrooms in the area of new construction using Category 6 based copper cabling.

V. DESCRIPTION OF OPTIONS (Continued)

OPTION ONE: ADDITION & RENOVATION TO THE NORTH-EAST

DESCRIPTION

Option One for the development of the John Archer School as an addition to the existing Bel Air Middle School, encompasses the phased construction of a two new additions to the existing Bel Air Middle School (a classroom wing and an administration wing) and demolition of the lowest classroom wing, art wing, and administration wing of the middle school, while placing the new John Archer School on the north-side of the existing Bel Air Middle School. The new John Archer School would be connected to the existing Bel Air Middle School via two short corridors, creating a large courtyard for natural lighting. One of these connections will require ADA compliant ramps in order to match the changes in floor elevation of the existing middle school. Vehicular access to the new John Archer School would remain the same: Idlewild Street and E. MacPhail Road.

This option creates the opportunity to reorient the existing Bel Air Middle School and create a new front for the school; along with a new administration wing, new Media Center, and a new classroom wing, and renovated/expanded cafeteria. By building a new classroom wing and Media Center, the spaces can be designed to meet current ADA requirements and thereby be more accessible to students with limited mobility.

This option also places the Parks and Recreation components of the program in a prominent location on the site and creates an opportunity to provide a separate entry for them.

By locating the John Archer School on the north-side of the existing Bel Air Middle School, the opportunity is created for both schools to share the same service entry and to locate the kitchens and mechanical spaces in close proximity to each other.

Because of the angle with which the Storm Water Management and Sanitary Easement cuts across the site, this development option limits the available area for the John Archer School building footprint. Because of this footprint limitation, ancillary office spaces will need to be located on a second floor of the new John Archer School and several internal relationships are less than ideal.

SITE CONSIDERATIONS

The existing utility easement running past the south end of the Bel Air Middle School may remain, and only minimal changes to existing manholes will be required in order to accommodate the new roads and paving.

V. DESCRIPTION OF OPTIONS (Continued)

OPTION ONE: ADDITION & RENOVATION TO THE NORTH-EAST (Continued)

SITE CONSIDERATIONS (Continued)

The new sanitary line servicing the new Bel Air High School may need to be relocated to the south-west of the new addition: running parallel to the south-west property line. This will depend on the configuration of the new Bel Air Middle School classroom wing.

Because of conflicts with the Homestead Elementary School building and fields, a connection to W. MacPhail road is unpractical and has not been included in this development approach.

Because the Homestead Elementary School is being left in place, parking and bus circulation for three schools must be accommodated in a very limited amount of space. The result is a large amount of impervious paving between the existing Bel Air Middle School and the existing Homestead Elementary School. Not only is this programmatically undesirable, it also makes storm water management of the site difficult and will require significant man-made filtration and holding structures. In order to meet the State of Maryland's new storm water management requirements, a good portion, if not all, of the John Archer School addition roof will need to be vegetated.

PROPOSED ADDITIONS

The John Archer School, with the additional program elements to be shared with the existing Bel Air Middle School and the new additions to replace demolished Bel Air Middle School classroom and administration space, shall be a 144,284 gross square foot (GSF) addition to the existing Bel Air Middle School.

PROPOSED FACILITY MODIFICATIONS

This approach includes the demolition of approximately 22,019 square feet (SF) of the existing Bel Air Middle School and renovation of approximately 7,428 square feet (SF) of space within the existing Bel Air Middle School: namely the existing Cafeteria.

OPTION ONE: ADDITION & RENOVATION TO THE NORTH-EAST (Continued)

PROPOSED MECHANICAL AND PLUMBING SYSTEMS

Generally all systems would remain the same as described in the "Common Design Elements" section. This layout, Option One, requires four sections of the existing Bel Air Middle School (BAMS) to be demolished so the new John Archer School can connect to the existing school. Two new wings are being constructed for BAMS. These include the following mechanical systems associated with BAMS:

- New Administration Center: This wing will be served by a rooftop VAV air-handling unit with heating water coil and DX cooling. Fan-powered VAV terminals will be used in the rooms.
- Classroom Wing: Since this is a large wing (18 classrooms), a rooftop VAV air-handling unit with heating water coil and DX cooling will be provided. Fan-powered VAV terminals will be used in the rooms.

When BAMS is upgraded in the future, the cooling coils can be changed out to chilled water and can connect to a chilled water system in the BAMS section.

There are a few items that both schools have in common. These include:

- If there is one address for both schools, there will be one water service to the building. A separate isolation valve will be provided for each school.
- There will be one fire sprinkler service for both buildings. The building zones will remain independent of each other.
- The energy management system will be common to both schools but zones will operate independent of each other.

PROPOSED ELECTRICAL SYSTEMS

Generally all systems would remain the same as described in the "Common Design Elements" section. This layout, Option One, requires four sections of the existing Bel Air Middle School (BAMS) to be demolished so the new John Archer School can connect to the existing school. Two new wings are being constructed for BAMS. Typically, existing panelboards have no spare capacity, therefore, where new wings construction are separated from the main project, it is recommended that new panelboards be provided in those areas.

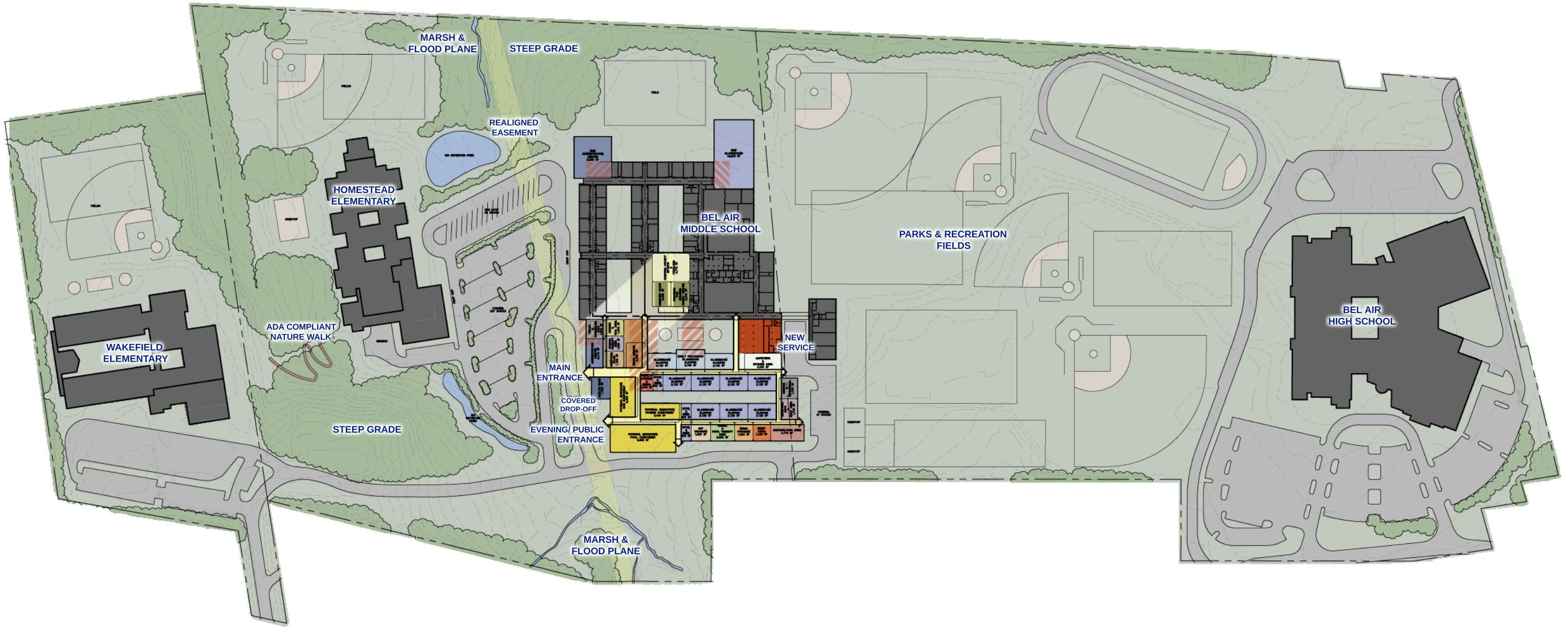
V. DESCRIPTION OF OPTIONS (Continued)

OPTION ONE: ADDITION & RENOVATION TO THE NORTH-EAST (Continued)

PROPOSED ELECTRICAL SYSTEMS (Continued)

There are a few items that both schools have in common. These include:

- If there is one address for both schools, there will be one electrical service to the building. Separate main circuit breakers will serve each school.



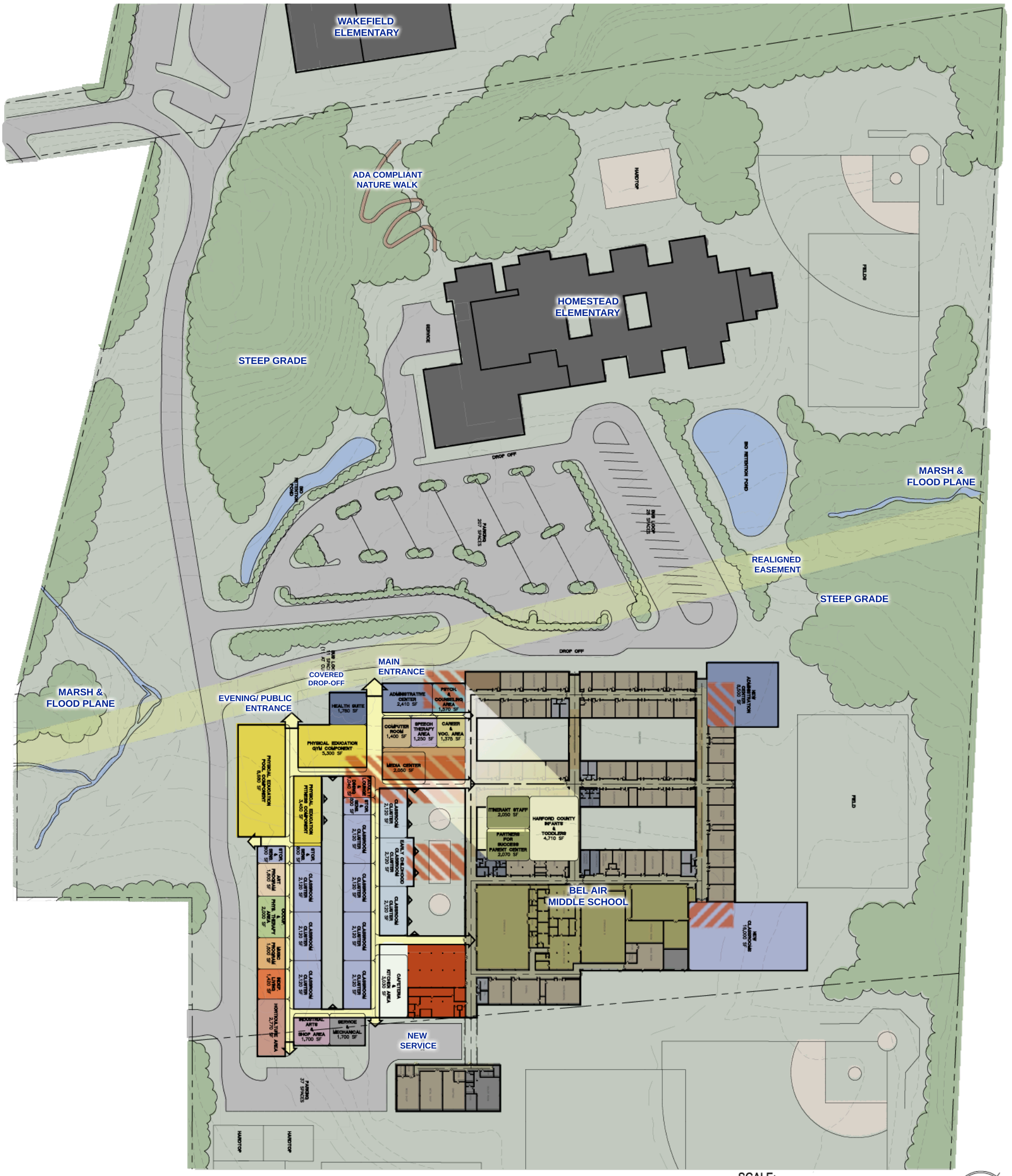
OPTION ONE - CAMPUS PLAN

SCALE: 0 60' 120' 240' 480'

TOPOGRAPHY IS ESTIMATED EXISTING CONDITIONS, AND MAY NOT REFLECT EXACT OR CURRENT CONDITIONS

LEGEND

- EXISTING BUILDING
- PROPOSED RENOVATION OF EXISTING BUILDING
- FIELDS, PLAY AREAS & SITE AMENITIES
- STREAM / POND
- SANITARTY / STORM WATER EASEMENT
- CIRCULATION
- ADMINISTRATIVE CENTER
- HEALTH SUITE
- PSYCHOLOGICAL / COUNSELING
- OCCUP. / PHYSICAL THERAPY
- CAREER / VOCATIONAL
- SPEECH THERAPY
- EARLY CHILDHOOD & ELEMENTARY PROGRAM
- MIDDLE & HIGH PROGRAM
- ART PROGRAM
- MUSIC PROGRAM
- PHYSICAL EDUCATION
- INDEPENDANT LIVING
- HORTICULTURE
- INDUSTRIAL ARTS / SHOP
- MEDIA CENTER
- COMPUTER ROOM
- HARFORD COUNTY INFANTS & TODDLERS
- ITINERANT STAFF
- PARTNERS FOR SUCCESS PARENT CENTER
- CAFETERIA / KITCHEN
- FACULTY LOUNGE / DINING
- BUILDING SERVICES



OPTION ONE - SITE PLAN

SCALE: 0 35' 70' 140' 280'

LEGEND

TOPOGRAPHY IS ESTIMATED EXISTING CONDITIONS, AND MAY NOT REFLECT EXACT OR CURRENT CONDITIONS

- EXISTING BUILDING
- PROPOSED RENOVATION OF EXISTING BUILDING
- FIELDS, PLAY AREAS & SITE AMENITIES
- STREAM / POND
- SANITARTY / STORM WATER EASEMENT
- CIRCULATION
- ADMINISTRATIVE CENTER
- HEALTH SUITE
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- COMPUTER ROOM
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- CAFETERIA / KITCHEN
- FACULTY LOUNGE / DINING
- BUILDING SERVICES

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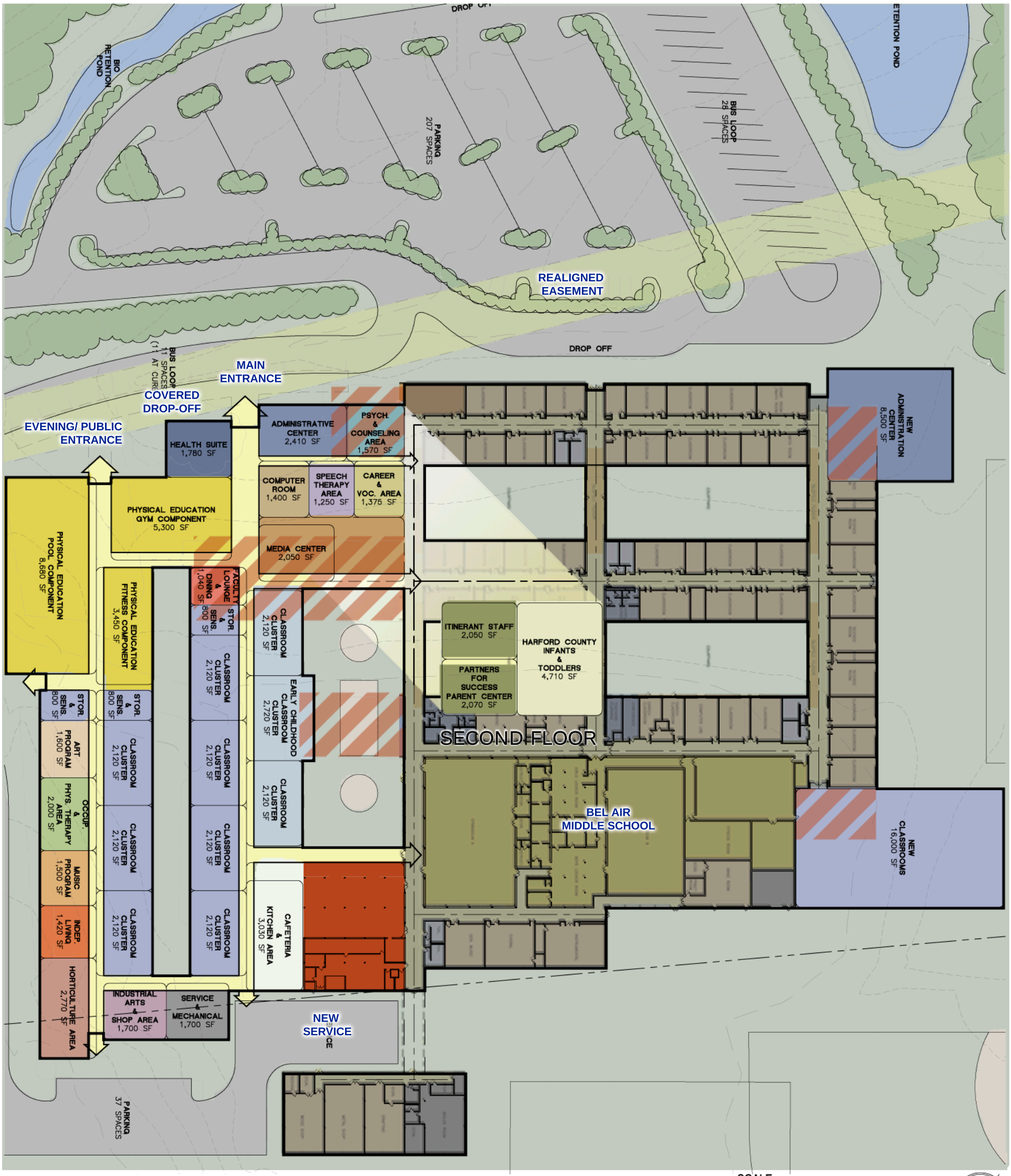

OPTION ONE - BUILDING PLAN

SCALE: 0 20' 40' 80' 160'

LEGEND

TOPOGRAPHY IS ESTIMATED EXISTING CONDITIONS, AND MAY NOT REFLECT EXACT OR CURRENT CONDITIONS

- EXISTING BUILDING
- PROPOSED RENOVATION OF EXISTING BUILDING
- FIELDS, PLAY AREAS & SITE AMENITIES
- STREAM / POND
- SANITARTY / STORM WATER EASEMENT
- CIRCULATION
- ADMINISTRATIVE CENTER
- HEALTH SUITE
- PSYCHOLOGICAL / COUNSELING
- OCCUP. / PHYSICAL THERAPY
- CAREER / VOCATIONAL
- SPEECH THERAPY
- EARLY CHILDHOOD & ELEMENTARY PROGRAM
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- ART PROGRAM
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- PHYSICAL EDUCATION
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- HORTICULTURE
- INDUSTRIAL ARTS / SHOP
- MEDIA CENTER
- COMPUTER ROOM
- HARFORD COUNTY INFANTS & TODDLERS
- ITINERANT STAFF
- PARTNERS FOR SUCCESS PARENT CENTER
- CAFETERIA / KITCHEN
- FACULTY LOUNGE / DINING
- BUILDING SERVICES

V. DESCRIPTION OF OPTIONS (Continued)

OPTION ONE: ADDITION & RENOVATION TO THE NORTH-EAST (Continued)

SQUARE FOOTAGE SUMMARY

	OPTION ONE
Existing Building (total)	159,504 GSF
New Construction (total)	144,284 GSF
Renovation (total)	7,428 GSF
Demolition (total)	22,019 GSF
Existing To Remain	130,057 GSF
Total Gross Square Feet	**281,769 GSF**

V. DESCRIPTION OF OPTIONS (Continued)

OPTION ONE: ADDITION & RENOVATION TO THE NORTH-EAST (Continued)

COST ESTIMATE SUMMARY

	OPTION ONE: ADDITION & RENOVATION TO THE NORTH-EAST		
	Qty.	**Unit Price**	**Total**
Total General Conditions			$2,517,349.00
Total Demolition			$280,940.00
Total Site Work			$2,781,811.00
Total Additions			$22,772,072.00
Total Renovations			$655,690.00
Total Systemic Renovations			$15,000.00
Subtotal			**$29,022,861.00**
Estimate Contingency (20%)			$5,804,572.00
Bonds & Insurance (2%)			$686,549.00
Overhead & Profit (5%)			$1,776,199.00
Estimate Total			**$37,300,182.00**
Say			**$37,325,000.00**

Notes:
- Cost estimates based on Scope Study as of September 15, 2009.
- No water/sewer tap fees, permitting fees, or engineering fees included.
- No relocations or upgrades to existing electric, gas, telephone, cable services are included in this estimate.
- No design fees or utility company charges.
- No connection fees.
- Estimate contingency is 20% per industry standard for Feasibility Stage estimate.

V. DESCRIPTION OF OPTIONS (Continued)

OPTION ONE: ADDITION & RENOVATION TO THE NORTH-EAST (Continued)

COST ESTIMATE BREAKDOWN

	OPTION ONE: ADDITION & RENOVATION TO THE NORTH-EAST		
	Qty.	**Unit Price**	**Total**
General Conditions			
Special Circumstances	1	$1,325,275.60	$1,325,276.00
Phasing Conditions	1	$1,192,073.10	$1,192,073.00
Total General Conditions			***$2,517,349.00***
Demolition			
Building	25336	$8.40	$212,822.00
Paving	8988	$6.04	$54,303.00
Curb & Gutter	3684	$3.75	$13,815.00
Total Demolition			***$280,940.00***
Site Work			
Grading & Sediment control			$411,802.00
Utilities			$402,924.00
Storm Water Management			$625,000.00
Paving			$889,075.00
Improvements			$322,711.00
Reforestation			$62,500.00
Landscaping			$67,800.00
Total Site Work			***$2,781,811.00***
Additions			
New School	123422	$147.92	$18,256,171.00
Pool	10675	$205.83	$2,197,271.00
Greenhouse	3217	$80.00	$257,360.00
Cafeteria	3438	$232.50	$799,335.00
Gymnasium	5802	$217.50	$1,261,935.00
Bridge Connections	0	$165.00	$0.00
Total Additions			***$22,772,072.00***

V. DESCRIPTION OF OPTIONS (Continued)

OPTION ONE: ADDITION & RENOVATION TO THE NORTH-EAST (Continued)

COST ESTIMATE BREAKDOWN (Continued)

	OPTION ONE: ADDITION & RENOVATION TO THE NORTH-EAST		
	Qty.	**Unit Price**	**Total**
Renovations			
Major Renovations	3406	$115.00	$391,690.00
Tie-in at New Addition	5	$15,000.00	$75,000.00
Reinforce Existing Structure	45000	$4.20	$189,000.00
Total Renovations			***$655,690.00***
Systemic Renovations			
ADA Ramps & Access	1	$15,000.00	$15,000.00
Total Systemic Renovations			***$15,000.00***
Subtotal			**$29,022,861.00**
Estimate Contingency (20%)			$5,804,572.00
Bonds and Insurance (2%)			$696,549.00
Overhead and Profit (5%)			$1,776,1998.00
Estimate Total			**$37,300,182.00**
Say			**$37,325,000.00**

V. DESCRIPTION OF OPTIONS (Continued)

OPTION ONE: ADDITION & RENOVATION TO THE NORTH-EAST (Continued)

ADVANTAGES

- The John Archer School and Bel Air Middle School may use the existing cafeteria and kitchen, and only minor additions and renovation to the existing space is required
- The outdoor play area courtyard is large enough to comfortable accommodate the play areas required by the Education Specification
- The service and mechanical areas for the John Archer School addition can be located in close proximity to the existing Bel Air Middle School mechanical and service areas, allowing for the site circulation and loading area to be shared
- The demolition of the portions of the existing wings at the north side of the middle school can be accomplished without needing additional support of the remaining structure.
- The is no crawlspace below the wings to be demolished that would required protection and maintenance.
- The John Archer School can be built prior to the construction of Wakefield/Homestead or if the Wakefield/Homestead Project is not funded.

V. DESCRIPTION OF OPTIONS (Continued)

OPTION ONE: ADDITION & RENOVATION TO THE NORTH-EAST (Continued)

DISADVANTAGES

- A connection to W. MacPhail Road is not feasible. Even if it were created, it would not be able to service the new John Archer School, thereby not providing the direct access to the hospital center.
- A major amount of demolition of the existing Bel Air Middle School is required to make this development approach possible. In addition, the replacement of these demolished classroom and administration areas must be included in the scope of this project.
- Due to limited site area, a portion of the John Archer School program needs to be placed on a second floor, which—because of the nature of the students using the school—is highly undesirable
- Several internal programmatic relationships are less than desirable due to space limitations.
- There is limited opportunity for grouped/clustered classrooms and fewer opportunities for circulation “nodes”.
- Significant man-made storm water structures will be required. In addition, a large amount of the new addition’s roof will need to be vegetated in order to meet the project’s storm water management goals
- This development approach for the John Archer School severely restricts the options for future revitalization, modernization, or replacement of the existing Bel Air Middle School
- The new two story structure next to the existing one story structure would cause snow drifting problems on the low roof. Additional structural modification and reinforcement of roof framing would be required.
- Alterations to existing structural elements that increase the seismic forces in those elements in excess of 10 percent will have to be brought up to current code specifications. This requirement may involve extensive reinforcement of the existing framing and beam connections. Braced frames may need to be incorporated in the existing building to resist lateral loads.
- Demolition of a portion of the rear 1993 addition will require support of some elements of the structure that remain. The new addition will need to be isolated from the existing structure.
- Renovation of the existing middle school as part of the new John Archer School that requires new roof top equipment will require reinforcement of the existing structure to support said equipment.

V. DESCRIPTION OF OPTIONS (Continued)

OPTION TWO: ADDITION & RENOVATION TO THE SOUTH-WEST

DESCRIPTION

Option Two for the development of the John Archer School as an addition to the existing Bel Air Middle School may begin construction prior to the abandonment of the Homestead Elementary School, as no part of the addition encroaches on the existing Homestead Elementary School or site access to it. This allows the construction of the John Archer School to occur without the completion of the Wakefield/Homestead Elementary School revitalization/modernization. However, in order for the new connection to W. MacPhail Road, new bus loop, and parking to be constructed, the Homestead Elementary School will have to be demolished. This study assumes that the cost for demolition and rough grading of the Homestead Elementary School and site shall be included in the Wakefield/Homestead Elementary Revitalization/Modernization project.

This option requires some accommodation on the existing site and would have an impact on the existing Bel Air Middle School. However, this impact can be addressed by phasing the construction of the addition and, specifically, shared spaces included in the new addition. This approach offers the most potential for inclusion opportunities between the Bel Air Middle School and John Archer School, but sacrifices security and increases the required circulation space in order to do so. The new John Archer School would be connected to the existing Bel Air Middle School via five short corridors, creating a number of narrow courtyards for natural lighting. Two of these connections will require ADA compliant ramps in order to match the changes in floor elevation of the existing middle school. A connection to W. MacPhail Road is created to allow the John Archer School its own vehicular access to the campus and a direct route to the Upper Chesapeake Medical Center. The Parks and Recreation component maintains a dedicated entrance at the "side" of the John Archer School, and a relationship with the John Archer School circulation that allows for easy separation from the school core when desired.

This option is dependent on the existing Storm Water Management and Sanitary Easement being relocated. The Town of Bel Air has expressed no objection to the relocation of these existing pipes, but requires that the existing eight inch (8 in.) terracotta sanitary pipe be replaced with a ductal iron pipe of the same size. In addition, the new sanitary line servicing the new Bel Air Middle School would need to be diverted/relocated to the south of the John Archer School addition. The cost of relocating these utility pipes has been included in the estimated cost of this development approach.

OPTION TWO: ADDITION & RENOVATION TO THE SOUTH-WEST (Continued)

DESCRIPTION (Continued)

Option Two will require limited demolition and renovation of the existing Bel Air Middle School, and a three (3) phase construction schedule will be required to accomplish construction without interfering with the Bel Air School students and curriculum. Phase One would address the relocation of site utilities and other site-related issues. Phase Two would be the construction of the new John Archer School addition, including the shared program spaces (Media Center and Cafeteria). Phase Three would be the selective demolition of the existing Cafeteria and renovation of the existing Cafeteria and Media Center. The selective demolition and interior renovation of the existing Bel Air Middle School's current Media Center and Cafeteria have been included in the estimated cost of this development option.

A major benefit of Option Two is the centrally located Shared Media Center and Shared Cafeteria that create "nodes" within the two schools that can be used to promote inclusion and interaction between student and staff bodies.

Due to the limited amount of space on the south-west side of the existing Bel Air Middle School, the change in grade from east to west, and proximity to the existing marshland and flood area, Option Two does not have the same flexibility as Option Three and seriously impacts the circulation inside and outside the new addition.

SITE CONSIDERATIONS

The existing utility easement running past the south of the Bel Air Middle School will need to be relocated. This will require that existing eight inch (8 in.) terracotta sanitary pipe must be relocated and replaced, in part, with ductal iron pipe of the same size and that the existing 36" storm water pipe be relocated. Though the existing easement is fifty feet (50 ft.) wide, the Town of Bel Air as agreed that the width of the new easement could be considerably less as long as adequate layback area for excavation is provided and no foundation loads are being applied to the new pipes.

The new sanitary line servicing the new Bel Air High School will need to be relocated to the south-west of the new addition: running parallel to the south-west property line.

The connection to W. MacPhail Road will require that either Harford County, or Harford County Public Schools, acquire the right to develop a portion of land currently owned—but unused thanks to a utility easement—by an adjacent property owner.

V. DESCRIPTION OF OPTIONS (Continued)

OPTION TWO: ADDITION & RENOVATION TO THE SOUTH-WEST (Continued)

SITE CONSIDERATIONS (Continued)

By demolishing the existing Homestead Elementary School and preserving as much of the pervious site between the Wakefield Elementary School and John Archer School addition as possible, the need for man-made filtration and storage structures will be reduced. However, a limited number of storm water structures will be required and a portion of the new addition's roof may need to be vegetated in order to achieve the storm water management goals for the project.

PROPOSED ADDITIONS

The John Archer School, with the additional program elements to be shared with the existing Bel Air Middle School, shall be a 140,302 gross square foot (GSF) addition to the existing Bel Air Middle School.

PROPOSED FACILITY MODIFICATIONS

This option includes the demolition of approximately 5,944 square feet (SF) of the existing Bel Air Middle School and renovation of approximately 8,714 square feet (SF) of space within the existing Bel Air Middle School. This space can be adapted to accommodate the immediate needs of the Bel Air Middle School, and could include core class rooms, specialized classrooms, or additional administrative space. HCPS tentatively plans to provide additional computer labs.

PROPOSED MECHANICAL AND PLUMBING SYSTEMS

Generally all systems would remain the same as described in the "Common Design Elements" section. This layout, Option Two, requires four sections of the existing Bel Air Middle School (BAMS) to be demolished so the new John Archer School can connect to the existing school. A new classroom wing is being constructed for BAMS to make-up for lost classrooms. These classrooms will be served by unit ventilators connected to BAMS heating water system. Cooling will be supplied by air-cooled condensers located on the roof. When BAMS is upgraded in the future, the coils can be changed out to chilled water and can connect to a chilled water system in the BAMS section of the school.

V. DESCRIPTION OF OPTIONS (Continued)

OPTION TWO: ADDITION & RENOVATION TO THE SOUTH-WEST (Continued)

PROPOSED MECHANICAL AND PLUMBING SYSTEMS (Continued)

There are a few items that both schools have in common. These include:

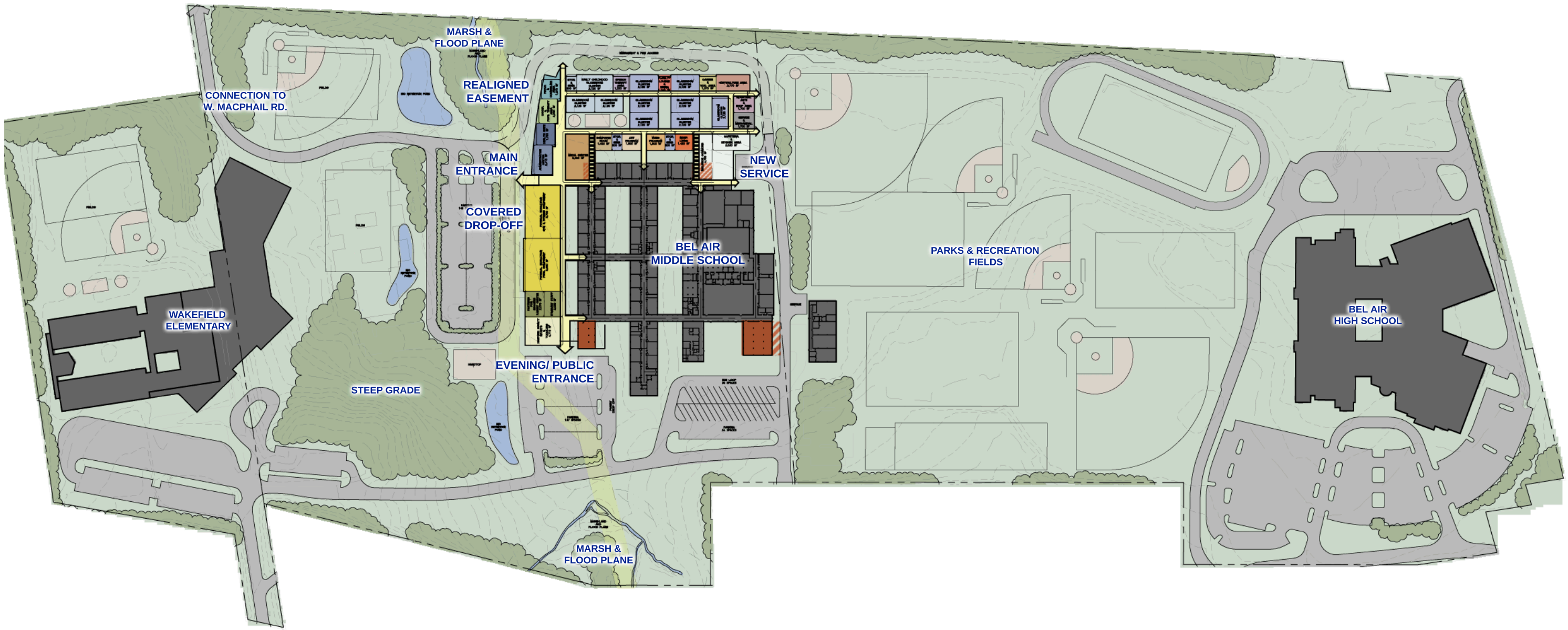
- If there is one address for both schools, there will be one water service to the building. A separate isolation valve will be provided for each school.
- There will be one fire sprinkler service for both buildings. The building zones will remain independent of each other.
- The energy management system will be common to both schools but zones will operate independent of each other.

PROPOSED ELECTRICAL SYSTEMS

Generally all systems would remain the same as described in the "Common Design Elements" section. This layout, Option Two, requires four sections of the existing Bel Air Middle School (BAMS) to be demolished so the new John Archer School can connect to the existing school. A new classroom wing is being constructed for BAMS to make-up for lost classrooms. Typically, existing panelboards have no spare capacity, therefore, where small areas of new construction are separated from the main project, it is recommended that new panelboards be provided in those areas.

There are a few items that both schools have in common. These include:

- If there is one address for both schools, there will be one electrical service to the building. Separate main circuit breakers will serve each school.



OPTION TWO - CAMPUS PLAN

SCALE: 0 60' 120' 240' 480'

TOPOGRAPHY IS ESTIMATED EXISTING CONDITIONS, AND MAY NOT REFLECT EXACT OR CURRENT CONDITIONS

LEGEND

- EXISTING BUILDING
- PROPOSED RENOVATION OF EXISTING BUILDING
- FIELDS, PLAY AREAS & SITE AMENITIES
- STREAM / POND
- SANITARTY / STORM WATER EASEMENT
- CIRCULATION
- ADMINISTRATIVE CENTER
- HEALTH SUITE
- PSYCHOLOGICAL / COUNSELING
- OCCUP. / PHYSICAL THERAPY
- CAREER / VOCATIONAL
- SPEECH THERAPY
- EARLY CHILDHOOD & ELEMENTARY PROGRAM
- MIDDLE & HIGH PROGRAM
- ART PROGRAM
- MUSIC PROGRAM
- PHYSICAL EDUCATION
- INDEPENDANT LIVING
- HORTICULTURE
- INDUSTRIAL ARTS / SHOP
- MEDIA CENTER
- COMPUTER ROOM
- HARFORD COUNTY INFANTS & TODDLERS
- ITINERANT STAFF
- PARTNERS FOR SUCCESS PARENT CENTER
- CAFETERIA / KITCHEN
- FACULTY LOUNGE / DINING
- BUILDING SERVICES

OPTION TWO - SITE PLAN

SCALE: 0 35' 70' 140' 280'

LEGEND

TOPOGRAPHY IS ESTIMATED EXISTING CONDITIONS, AND MAY NOT REFLECT EXACT OR CURRENT CONDITIONS

- EXISTING BUILDING
- PROPOSED RENOVATION OF EXISTING BUILDING
- FIELDS, PLAY AREAS & SITE AMENITIES
- STREAM / POND
- SANITARTY / STORM WATER EASEMENT
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- CAFETERIA / KITCHEN
- FACULTY LOUNGE / DINING
- BUILDING SERVICES

OPTION TWO - BUILDING PLAN

SCALE: 0 20' 40' 80' 160'

LEGEND

TOPOGRAPHY IS ESTIMATED EXISTING CONDITIONS, AND MAY NOT REFLECT EXACT OR CURRENT CONDITIONS

- EXISTING BUILDING
- PROPOSED RENOVATION OF EXISTING BUILDING
- FIELDS, PLAY AREAS & SITE AMENITIES
- STREAM / POND
- SANITARTY / STORM WATER EASEMENT
- CIRCULATION
- ADMINISTRATIVE CENTER
- HEALTH SUITE
- PSYCHOLOGICAL / COUNSELING
- OCCUP. / PHYSICAL THERAPY
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- EARLY CHILDHOOD & ELEMENTARY PROGRAM
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- CAFETERIA / KITCHEN
- FACULTY LOUNGE / DINING
- BUILDING SERVICES

V. DESCRIPTION OF OPTIONS (Continued)

OPTION TWO: ADDITION & RENOVATION TO THE SOUTH-WEST (Continued)

SQUARE FOOTAGE SUMMARY

	OPTION TWO
Existing Building (total)	159,504 GSF
New Construction (total)	140,302 GSF
Renovation (total)	8,714 GSF
Demolition (total)	5,944 GSF
Existing To Remain	144,946 GSF
Total Gross Square Feet	**293,862 GSF**

V. DESCRIPTION OF OPTIONS (Continued)

OPTION TWO: ADDITION & RENOVATION TO THE SOUTH-WEST (Continued)

COST ESTIMATE SUMMARY

	OPTION TWO: ADDITION & RENOVATION TO THE SOUTH-WEST		
	Qty.	**Unit Price**	**Total**
Total General Conditions			$1,992,255.00
Total Demolition			$192,362.00
Total Site Work			$3,075,441.00
Total Additions			$23,170,592.00
Total Renovations			$105,000.00
Total Systemic Renovations			$30,000.00
Subtotal			**$28,565,649.00**
Estimate Contingency (20%)			$5,713,130.00
Bonds & Insurance (2%)			$685,576.00
Overhead & Profit (5%)			$1,748,218.00
Estimate Total			**$36,712,572.00**
Say			**$36,750,000.00**

Notes:
- Cost estimates based on Scope Study as of September 15, 2009.
- No water/sewer tap fees, permitting fees, or engineering fees included.
- No relocations or upgrades to existing electric, gas, telephone, cable services are included in this estimate.
- No design fees or utility company charges.
- No connection fees.
- Estimate contingency is 20% per industry standard for Feasibility Stage estimate.

V. DESCRIPTION OF OPTIONS (Continued)

OPTION TWO: ADDITION & RENOVATION TO THE SOUTH-WEST (Continued)

COST ESTIMATE BREAKDOWN

	OPTION TWO: ADDITION & RENOVATION TO THE SOUTH-WEST		
	Qty.	**Unit Price**	**Total**
General Conditions			
Special Circumstances	1	$1,328,669.70	$1,328,670.00
Phasing Conditions	1	$663,584.90	$663,585.00
Total General Conditions			***$1,992,255.00***
Demolition			
Building	14791	$8.40	$124,244.00
Paving	8988	$6.04	$54,303.00
Curb & Gutter	3684	$3.75	$13,815.00
Total Demolition			***$192,362.00***
Site Work			
Grading & Sediment control			$434,207.00
Utilities			$627,189.00
Storm Water Management			$500,000.00
Paving			$1,047,047.00
Improvements			$336,701.00
Reforestation			$62,500.00
Landscaping			$67,800.00
Total Site Work			***$3,075,441.00***
Additions			
New School	103442	$147.92	$15,300,796.00
Pool	12001	$205.83	$2,470,206.00
Greenhouse	3230	$80.00	$258,400.00
Cafeteria	12001	$232.50	$2,790,233.00
Gymnasium	10809	$217.50	$2,350,958.00
Bridge Connections	0	$165.00	$0.00
Total Additions			***$23,170,592.00***

V. DESCRIPTION OF OPTIONS (Continued)

OPTION TWO: ADDITION & RENOVATION TO THE SOUTH-WEST (Continued)

COST ESTIMATE BREAKDOWN (Continued)

	OPTION TWO: ADDITION & RENOVATION TO THE SOUTH-WEST		
	Qty.	**Unit Price**	**Total**
Renovations			
Major Renovations	0	$115.00	$0.00
Tie-in at New Addition	7	$15,000.00	$105,000.00
Reinforce Existing Structure	0	$4.20	$0.00
Total Renovations			***$105,000.00***
Systemic Renovations			
ADA Ramps & Access	2	$15,000.00	$30,000.00
Total Systemic Renovations			***$30,000.00***
Subtotal			**$28,565,649.00**
Estimate Contingency (20%)			$5,713,130.00
Bonds and Insurance (2%)			$685,576.00
Overhead and Profit (5%)			$1,748,218.00
Estimate Total			**$36,712,572.00**
Say			**$36,750,000.00**

V. DESCRIPTION OF OPTIONS (Continued)

OPTION TWO: ADDITION & RENOVATION TO THE SOUTH-WEST (Continued)

ADVANTAGES

- The John Archer School addition can be built without the demolition of the Homestead Elementary School
- The interior courtyard play area for the Early Childhood and Elementary program elements, though small, provides a secure outdoor activity/play area for students
- The direct access provided to both the John Archer School and the Bel Air Middle School and the play fields south-east of the facility allows for the two schools to function independently while still being closely attached to one another
- The separation of the administrative, itinerate, parent, and toddler programs from the classroom core allows these elements to operate without interfering with student instruction
- The centrality of the Shared Cafeteria and Shared Media Center program elements and the opportunities they provide for inclusion, social interaction, and interior design
- The demolition of the portions of the existing wings at the front of the middle school and the rear corners of the 1993 addition can be accomplished without needing additional support of the remaining structure.
- The connection of the new building components to the existing building spaces can be accomplished with two or potentially three enclosed corridors that do not adversely affect the existing structure.
- The new building can be built using conventional building techniques and materials.
- New roofs of the adjacent construction can be kept to match the existing roof to eliminate snow drifting concerns.

V. DESCRIPTION OF OPTIONS (Continued)

OPTION TWO: ADDITION & RENOVATION TO THE SOUTH-WEST (Continued)

DISADVANTAGES

- Several internal programmatic relationships are not desirable due to the need for so many of the program elements to be close to the school's main entry
- Internal circulation is increased due to the need to wrap two sides of the existing Bel Air Middle School, and the connections between the existing Bel Air Middle School circulation and the new John Archer School will be challenging due to changed in floor elevation and grades
- The Physical Education and Infants and Toddlers program spaces are isolated from the main portion of the John Archer School
- The number of connections being made to the existing Bel Air Middle School make providing security for the John Archer Students, and monitoring of students traveling between schools, difficult
- Some man-made storm water structures will be required. In addition, a limited amount of the new addition's roof will need to be vegetated in order to meet the project's storm water management goals
- This development approach for the John Archer School significantly restricts the options for future revitalization, modernization, or replacement of the existing Bel Air Middle School
- The existing storm drainage piping and swale on the side of the middle school will have to be relocated and the area backfilled with controlled structural fill to the proposed grade elevations.
- Renovation of the existing middle school as part of the new John Archer School that requires new roof top equipment will require reinforcement of the existing structure to support said equipment.

V. DESCRIPTION OF OPTIONS (Continued)

OPTION THREE: ADDITION TO THE SOUTH-EAST

DESCRIPTION

Option Three for the development of the John Archer School as an addition to the existing Bel Air Middle School requires that the Wakefield Elementary School be expanded and the Homestead Elementary School be demolished prior to the construction of the John Archer School, which will be built—roughly—in the place of Homestead Elementary. However, this study assumes that the cost for demolition and rough grading of the Homestead Elementary School and site shall be included in the Wakefield/Homestead Elementary Revitalization/Modernization project.

This option requires minimal accommodation on the existing site and would have minimal impact on the existing Bel Air Middle School while also providing inclusion opportunities between the renovated Wakefield Elementary School and Early Childhood and Elementary programs within the John Archer School. A connection to West MacPhail Road is created to allow the John Archer School its own vehicular access to the campus and a direct route to the Upper Chesapeake Medical Center. The Parks and Recreation component maintains a dedicated entrance at the "rear" of the John Archer School and a relationship with the John Archer School circulation that allows for easy separation from the school core when desired.

This option is dependant on the existing Storm Water Management and Sanitary Easement being relocated. The Town of Bel Air has expressed the relocation of these existing pipes would be acceptable, but would require that the existing eight inch (8 in.) terracotta sanitary pipe be replaced with a ductal iron pipe of the same size. The cost of relocating these utility pipes has been included in the estimated cost of this development approach.

Option Three allows for the construction of the new John Archer School without significant disruption of existing Bel Air Middle School. Only limited demolition and renovation to the existing school will be required to attach the new John Archer School via the corridors bridging the relocated Storm Water and Sanitary easement. There will be no need for a complex phased construction schedule in order to accommodate Bel Air Middle School students and curriculum. However, with the replacement of the existing Bel Air Middle School's Media Center and Cafeteria within the new John Archer School, these existing spaces could be renovated to address other needs of the Bel Air Middle School program. Though Option Three has limited demolition and renovation of the existing Bel Air Middle School, the cost of renovating the existing Media Center and Cafeteria have been included in the estimated cost of this development approach.

This approach allows for the most flexibility in accommodating the requirements of the John Archer School Education Specification while limiting the negative impact on the existing site and campus.

V. DESCRIPTION OF OPTIONS (Continued)

OPTION THREE: ADDITION TO THE SOUTH-EAST

SITE CONSIDERATIONS

- The existing utility easement running past the south of the Bel Air Middle School will need to be relocated. This will require that existing eight inch (8 in.) terracotta sanitary pipe must be relocated and replaced with ductal iron pipe of the same size and that the existing 36" storm water pipe be relocated. Though the existing easement is fifty feet (50 ft.) wide, the Town of Bel Air as agreed that the width of the new easement could be considerably less as long as adequate layback area for excavation is provided and no foundation loads are being applied to the new pipes.

- The new sanitary line servicing the new Bel Air High School does not need to be relocated, though a portion of it may need to be modified and a new manhole added to accommodate the relocation of the eight inch sanitary line mentioned above.

- The connection to W. MacPhail Road will require that either Harford County, or Harford County Public Schools, acquire the right to develop a portion of land currently owned—but unused thanks to a utility easement—by an adjacent property owner.

- Placing the school so that its footprint somewhat overlaps that of the existing Homestead Elementary School allows for a simple storm water management plan that can be achieved with far less need for man-made filtration and storage structures.

- This option does not require significant removal of existing forests or natural habitat, and provides the opportunity for major reforestation if it is warranted.

PROPOSED ADDITIONS

The John Archer School, with the additional program elements to be shared with the existing Bel Air Middle School, shall be a 136,006 gross square foot (GSF) addition to the existing Bel Air Middle School.

PROPOSED FACILITY MODIFICATIONS

This option also includes the renovation of approximately 10,483 square feet (SF) of space within the existing Bel Air Middle School, which formerly housed the middle school media and cafeteria/kitchen now located in the addition. This space can be adapted to accommodate the immediate needs of the Bel Air Middle School, and could include core class rooms, specialized class rooms, or additional administrative space. HCPS tentatively plans to provide additional computer labs.

V. DESCRIPTION OF OPTIONS (Continued)

OPTION THREE: ADDITION TO THE SOUTH-EAST (Continued)

PROPOSED MECHANICAL AND PLUMBING SYSTEMS

All systems would remain the same as described in the “Common Design Elements” section.

PROPOSED ELECTRICAL SYSTEMS

All systems would remain the same as described in the “Common Design Elements” section.

OPTION THREE - CAMPUS PLAN

SCALE: 0 60' 120' 240' 480'

TOPOGRAPHY IS ESTIMATED EXISTING CONDITIONS, AND MAY NOT REFLECT EXACT OR CURRENT CONDITIONS

LEGEND

- EXISTING BUILDING
- PROPOSED RENOVATION OF EXISTING BUILDING
- FIELDS, PLAY AREAS & SITE AMENITIES
- STREAM / POND
- SANITARTY / STORM WATER EASEMENT
- CIRCULATION
- ADMINISTRATIVE CENTER
- HEALTH SUITE
- PSYCHOLOGICAL / COUNSELING
- OCCUP. / PHYSICAL THERAPY
- CAREER / VOCATIONAL
- SPEECH THERAPY
- EARLY CHILDHOOD & ELEMENTARY PROGRAM
- MIDDLE & HIGH PROGRAM
- ART PROGRAM
- MUSIC PROGRAM
- PHYSICAL EDUCATION
- INDEPENDANT LIVING
- HORTICULTURE
- INDUSTRIAL ARTS / SHOP
- MEDIA CENTER
- COMPUTER ROOM
- HARFORD COUNTY INFANTS & TODDLERS
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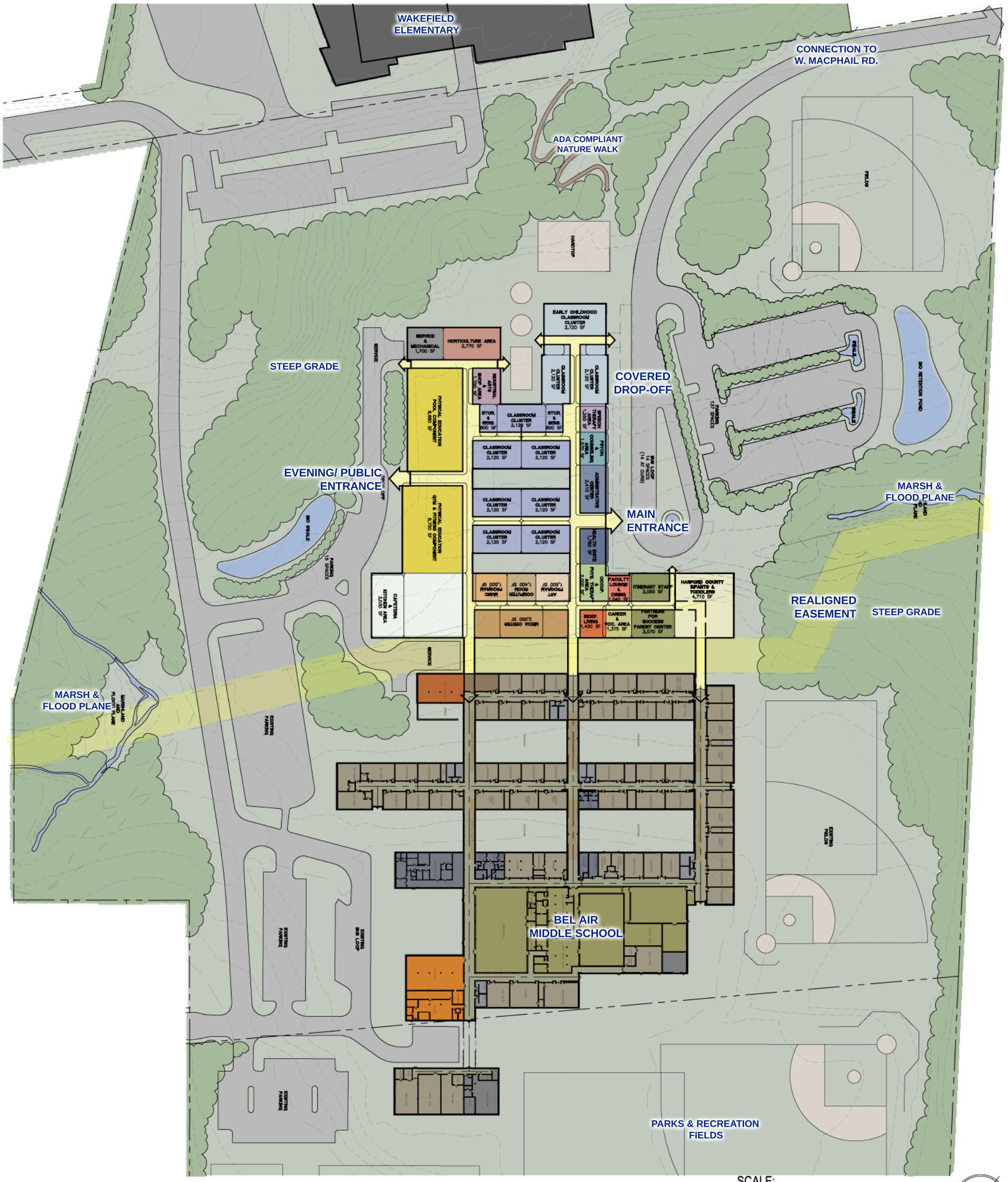
- FACULTY LOUNGE / DINING
- BUILDING SERVICES



OPTION THREE - SITE PLAN

SCALE: 0 35' 70' 140' 280'

LEGEND

TOPOGRAPHY IS ESTIMATED EXISTING CONDITIONS, AND MAY NOT REFLECT EXACT OR CURRENT CONDITIONS

- EXISTING BUILDING
- PROPOSED RENOVATION OF EXISTING BUILDING
- FIELDS, PLAY AREAS & SITE AMENITIES
- STREAM / POND
- SANITARTY / STORM WATER EASEMENT
- CIRCULATION
- ADMINISTRATIVE CENTER
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- CAFETERIA / KITCHEN
- FACULTY LOUNGE / DINING
- BUILDING SERVICES

OPTION THREE - BUILDING PLAN

LEGEND

TOPOGRAPHY IS ESTIMATED EXISTING CONDITIONS, AND MAY NOT REFLECT EXACT OR CURRENT CONDITIONS

- EXISTING BUILDING
- PROPOSED RENOVATION OF EXISTING BUILDING
- FIELDS, PLAY AREAS & SITE AMENITIES
- STREAM / POND
- SANITARTY / STORM WATER EASEMENT
- CIRCULATION
- ADMINISTRATIVE CENTER
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- PSYCHOLOGICAL / COUNSELING
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- CAFETERIA / KITCHEN
- FACULTY LOUNGE / DINING
- BUILDING SERVICES

V. DESCRIPTION OF OPTIONS (Continued)

OPTION THREE: ADDITION TO THE SOUTH-EAST (Continued)

SQUARE FOOTAGE SUMMARY

	OPTION THREE
Existing Building (total)	159,504 GSF
New Construction (total)	136,006 GSF
Renovation (total)	10,483 GSF
Demolition (total)	0 GSF
Existing To Remain	149,021 GSF
Total Gross Square Feet	**295,510 GSF**

V. DESCRIPTION OF OPTIONS (Continued)

OPTION THREE: ADDITION TO THE SOUTH-EAST (Continued)

COST ESTIMATE SUMMARY

	OPTION THREE: ADDITION TO THE SOUTH-EAST		
	Qty.	**Unit Price**	**Total**
Total General Conditions			$1,278,964.00
Total Demolition			$44,674.00
Total Site Work			$2,310,715.00
Total Additions			$22,029,473.00
Total Renovations			$1,194,425.00
Total Systemic Renovations			$0.00
Subtotal			**$26,858,251.00**
Estimate Contingency (20%)			$5,371,650.00
Bonds and Insurance (2%)			$644,598.00
Overhead and Profit (5%)			$1,643,725.00
Estimate Total			**$34,518,224.00**
Say			**$34,550,000.00**

Notes:
- Cost estimates based on Scope Study as of September 15, 2009.
- No water/sewer tap fees, permitting fees, or engineering fees included.
- No relocations or upgrades to existing electric, gas, telephone, cable services are included in this estimate.
- No design fees or utility company charges.
- No connection fees.
- Estimate contingency is 20% per industry standard for Feasibility Stage estimate.

V. DESCRIPTION OF OPTIONS (Continued)

OPTION THREE: ADDITION TO THE SOUTH-EAST (Continued)

COST ESTIMATE BREAKDOWN

	OPTION THREE: ADDITION TO THE SOUTH-EAST		
	Qty.	**Unit Price**	**Total**
General Conditions			
Special Circumstances	1	$1,278,964.30	$1,278,964.00
Phasing Conditions	0	0	$0.00
Total General Conditions			***$1,278,964.00***
Demolition			
Building	0	$8.40	$0.00
Paving	5667	$6.04	$34,238.00
Curb & Gutter	2783	$3.75	$10,436.00
Total Demolition			***$44,674.00***
Site Work			
Grading & Sediment control			$420,600.00
Utilities			$570,320.00
Storm Water Management			$350,000.00
Paving			$560,370.00
Improvements			$286,925.00
Reforestation			$62,500.00
Landscaping			$60,000.00
Total Site Work			***$2,310,715.00***
Additions			
New School	100086	$147.92	$14,804,388.00
Pool	11409	$205.83	$2,348,353.00
Greenhouse	1701	$80.00	$136,080.00
Cafeteria	13076	$232.50	$3,040,170.00
Gymnasium	5569	$217.50	$1,211,258.00
Bridge Connections	2965	$165.00	$489,225.00
Total Additions			***$22,029,473.00***

V. DESCRIPTION OF OPTIONS (Continued)

OPTION THREE: ADDITION TO THE SOUTH-EAST (Continued)

COST ESTIMATE BREAKDOWN (Continued)

	OPTION THREE: ADDITION TO THE SOUTH-EAST		
	Qty.	**Unit Price**	**Total**
Renovations			
Major Renovations	9995	$115.00	$1,149,425.00
Tie-in at New Addition	3	$15,000.00	$45,000.00
Reinforce Existing Structure	0	$4.20	$0.00
Total Renovations			***$1,194,425.00***
Systemic Renovations			
ADA Ramps & Access	0	$15,000.00	$0.00
Total Systemic Renovations			***$0.00***
Subtotal			**$26,858,251.00**
Estimate Contingency (20%)			$5,371,650.00
Bonds and Insurance (2%)			$644,598.00
Overhead and Profit (5%)			$1,643,725.00
Estimate Total			**$34,518,224.00**
Say			**$34,550,000.00**

V. DESCRIPTION OF OPTIONS (Continued)

OPTION THREE: ADDITION TO THE SOUTH-EAST (Continued)

ADVANTAGES

- The shared play fields between the John Archer School and the proposed Homestead/Wakefield Elementary School addition
- The potential inclusion opportunities gained by locating the Shared Media Center, Shared Cafeteria, Computer Room, Art Rooms, and Music Rooms close to the Bel Air Middle School.
- The cluster arrangement of the Early Childhood and Elementary programs with their own entry and proximity to the existing Wakefield Elementary School and their proximity to parking.
- Separate wing for itinerate, parent, and toddler programs with independent entrances and adjacent parking.
- The potential for circulation “nodes” throughout the building which accommodate social interaction among the users and an opportunity to create identifiable destinations within the school’s circulation paths.
- This development approach for the John Archer School does not restrict the options for future revitalization, modernization, or replacement of the existing Bel Air Middle School.
- Provides the shortest access to medical facilities.
- Keeps the existing Bel Air Middle School frontage and site circulation.
- The limited new paving requires less Storm Water Management.
- Maintains the existing play fields adjacent to the Bel Air Middle School.
- The new structure can achieve the desired layout without being constrained by existing column and bearing wall locations.
- The new building can still be connected to the existing middle school via two or potentially three enclosed corridor links, all at a common finish floor elevation.
- The new building can be built using conventional building techniques and materials.
- The new building connection corridors will not cause any snow drifting on the existing building that would require modification to the existing structure.

V. DESCRIPTION OF OPTIONS (Continued)

OPTION THREE: ADDITION TO THE SOUTH-EAST (Continued)

DISADVANTAGES

- The limited connections between the John Archer School and the existing Bel Air Middle School, via the use of the corridors bridging the utility easement, can be viewed as a disadvantage. However, the Committee preferred the limited access: it allows for easier monitoring and control of John Archer students passing from one school to the other; and it provides the potential for secure shared outdoor activity areas between the John Archer School and Bel Air Middle School
- Additional cost for re-aligning utility lines
- Must acquire access easement or right-of-way to connect to West MacPhail Road
- The existing storm drainage pipe, that the connecting corridors need to cross to access the middle school, is a large diameter pipe and is deep in the ground. The new foundations for the connecting links need to be constructed to span the drainage pipe using unconventional techniques
- Requires the demolition of the Homestead Elementary School

VI. APPENDIX

Draft John Archer School Educational Specifications for Harford County Public Schools
Date: September 15, 2009.

Middle & High Program Room Name	Teaching Stations	Unit S.F.	No. of Rooms	Total S.F.	
Classroom	14	700	14	9,800	
Large Toilet/Lavatory Room	0	160	14	2,240	
Teacher Work Planning Rooms	0	200	7	1,400	
Storage	0	400	2	800	
Equipment Parking Lot	0	200	7	1,400	
Multi-Sensory Room Area	0	400	2	800	
	14	**2,060**	**46**	**16,440**	**16,440**

Early Childhood & Elementary Program Room Name	Teaching Stations	Unit S.F.	No. of Rooms	Total S.F.	
Early Childhood Classroom	2	1,000	2	2,000	
Elementary Classroom	4	700	4	2,800	
Large Toilet/Lavatory Room	0	160	6	960	
Teacher Work Planning Rooms	0	200	3	600	
Storage	0	400	1	400	
Equipment Parking Lot	0	200	3	600	
Multi-Sensory Room	0	400	1	400	
	6	**3,060**	**20**	**7,760**	**7,760**

Art Program Room Name	Teaching Stations	Unit S.F.	No. of Rooms	Total S.F.	
Classroom	1	1,200	1	1,200	
Kiln Room	0	100	1	100	
Storage/ Work Planning	0	300	1	300	
	1	**1,600**	**3**	**1,600**	**1,600**

Music Program Room Name	Teaching Stations	Unit S.F.	No. of Rooms	Total S.F.	
Classroom	2	700	2	1,400	
Storage	0	100	1	100	
	2	**800**	**3**	**1,500**	**1,500**

Shared Media Center Room Name	Teaching Stations	Unit S.F.	No. of Rooms	Total S.F.	
Shared Media Center Area	1	3,614	1	3,614	
Shared Work Room	0	350	1	350	
JAS Media Office	2	290	1	290	
BAMS Media Office	2	290	1	290	
JAS Media Storage	0	250	1	250	
BAMS Media Storage	0	450	1	450	
IEP Meeting Room (Corridor Access)	0	500	1	500	
	4	**5,744**	**7**	**5,744**	**5,744**

Computer Room Room Name	Teaching Stations	Unit S.F.	No. of Rooms	Total S.F.	
Computer Lab (35 work stations)	1	1,200	1	1,200	
Audiovisual & General Storage	1	200	1	200	
	2	**1,400**	**2**	**1,400**	**1,400**

Career/ Vocational Area Room Name	Teaching Stations	Unit S.F.	No. of Rooms	Total S.F.	
Laboratory	1	1,035	1	1,035	
Storage	0	140	1	140	
Recycling Room	0	120	1	120	
Office	0	80	1	80	
	1	**1,375**	**4**	**1,375**	**1,375**

Industrial Arts/ Shop Area Room Name	Teaching Stations	Unit S.F.	No. of Rooms	Total S.F.	
Classroom	1	600	1	600	
Laboratory	0	900	1	900	
Finishing Room	0	100	1	100	
Storage Room	0	100	1	100	
	1	**1,700**	**4**	**1,700**	**1,700**

VI. APPENDIX (Continued)

Physical Education Room Name	Teaching Stations	Unit S.F.	No. of Rooms	Total S.F.	
Gymnasium	1	3,000	1	3,000	
Parks & Recreation Storage	0	400	1	400	
PE Office	0	400	1	400	
PE Toilet/ Shower/ Lavatory	0	100	1	100	
PE Storage Closet	0	400	2	800	
Fitness Lab/ Physical Therapy	0	1,300	1	1,300	
Fitness Lab Storage Room	0	250	1	250	
Motor Development Room	1	1,600	1	1,600	
Motor Development Storage	0	300	1	300	
Male Gang Toilet Room	0	300	1	300	
Female Gang Toilet Room	0	300	1	300	
Therapy Pool	1	6,000	1	6,000	
Pool Office	0	200	1	200	
Pool Office Unisex Bathroom	0	100	1	100	
Girls Locker Room	0	825	1	825	
Girls Shower Room	0	125	1	125	
Boys Locker Room	0	825	1	825	
Boys Shower Room	0	125	1	125	
Pool Storage JAS	0	200	1	200	
Pool Storage Parks & Recreation	0	200	1	200	
Laundry Room	0	80	1	80	
	3	**17,030**	**22**	**17,430**	**17,430**

Horticulture Area Room Name	Teaching Stations	Unit S.F.	No. of Rooms	Total S.F.	
Classroom Lab	1	800	1	800	
Greenhouse	0	1,650	1	1,650	
Walk-in Cooler	0	120	1	120	
Storage	0	100	2	200	
	1	**2,670**	**5**	**2,770**	**2,770**

Shared Cafeteria/ Kitchen Area Room Name	Teaching Stations	Unit S.F.	No. of Rooms	Total S.F.	
Shared Cafeteria/Cafetorium	0	8,505	1	8,505	
Kitchen	0	4,000	1	4,000	
Food Prep (Nurses Station)	0	250	1	250	
Kitchen Managers Office	0	100	1	100	
Food Staff Locker Room	0	40	1	40	
Unisex Toilets	0	100	2	200	
Food Services Laundry Room	0	40	1	40	
Cafeteria Storage	0	250	1	250	
	0	**13,285**	**9**	**13,385**	**13,385**

Faculty Lounge/ Dining Room Name	Teaching Stations	Unit S.F.	No. of Rooms	Total S.F.	
Lounge/Dining Area	0	700	1	700	
Storage	1	100	1	100	
Unisex Toilets	0	80	2	160	
	0	**880**	**4**	**960**	**960**

Administrative Center Room Name	Teaching Stations	Unit S.F.	No. of Rooms	Total S.F.	
Lobby Area	0	450	1	450	
General Office & Reception Area	0	400	1	400	
Principal Office	0	200	1	200	
Assistant Principal Office	0	150	1	150	
Instructional Facilitator	0	120	1	120	
Mentor Office	0	120	1	120	
Conference Room	0	200	1	200	
School Store	0	60	1	60	
Unisex Toilet Rooms	0	80	2	160	
Workroom/Storage/Closet Room	0	300	1	300	
Records Room	0	250	1	250	
	0	**2,330**	**12**	**2,410**	**2,892**

Psychologist/ Counseling Area Room Name	Teaching Stations	Unit S.F.	No. of Rooms	Total S.F.	
Counseling Office	0	150	1	150	
Psychologist Office	0	150	1	150	
Education Evaluator Office	0	150	1	150	
Behavior Specialist Office	0	150	1	150	
Testing Suites	0	90	2	180	
Conference Suites	0	200	2	400	
Behavior Resource Suite	0	300	1	300	
Testing Storage Closet	0	90	1	90	
	0	**1,280**	**10**	**1,570**	**1,884**

Speech Therapy Area Room Name	Teaching Stations	Unit S.F.	No. of Rooms	Total S.F.	
ADL Classroom	2	500	1	500	
Unisex Toilet	0	100	1	100	
Speech Therapy Rooms	0	200	2	400	
Storage	0	100	1	100	
Speech Pathologist Office	0	150	1	150	
	2	**1,050**	**6**	**1,250**	**1,500**

Health Suite Room Name	Teaching Stations	Unit S.F.	No. of Rooms	Total S.F.	
Office	0	200	1	200	
Rest Area	0	200	1	200	
Exam Room	0	400	1	400	
Waiting Room	0	250	1	250	
Triage Room	0	100	1	100	
Storage/ Supplies Room	0	150	1	150	
Unisex Toilets (Shower in Toilet)	0	160	2	320	
Storage IV Poles	0	100	1	100	
Linen Closet	0	10	1	10	
Medicine Prep Area	0	120	1	120	
	0	**1,690**	**11**	**1,850**	**1,850**

Occupational/ Physical Therapy Area Room Name	Teaching Stations	Unit S.F.	No. of Rooms	Total S.F.	
OT/PT Activity Room	1	1,200	1	1,200	
OT/PT Office	0	400	1	400	
OT/PT Storage	0	100	4	400	
	1	**1,700**	**6**	**2,000**	**2,000**

Harford County Infants & Toddlers (Not JAS Staff) Room Name	Teaching Stations	Unit S.F.	No. of Rooms	Total S.F.	
Director's Office	0	150	1	150	
Reception/ Waiting Area	0	250	1	250	
Reception Support Staff	0	200	1	200	
Unisex Bathroom w/change table	0	100	1	100	
Conference Room	0	400	1	400	
Faculty Staff Lounge	0	400	1	400	
Testing/ Therapy Room	0	260	1	260	
Audiology Suite	0	600	1	600	
Classroom	0	900	1	900	
Work Room	0	400	1	400	
Male Toilet Room	0	125	1	125	
Female Toilet Room	0	125	1	1250	
Teacher/ Therapist Storage	0	500	1	500	
Office Storage Room	0	200	1	200	
Old File Storage Room	0	100	1	100	
	0	**4,710**	**15**	**4,710**	**5,652**

VI. APPENDIX (Continued)

Independent Living Room Name	Teaching Stations	Unit S.F.	No. of Rooms	Total S.F.	
Classroom	1	700	1	700	
Laundry Room	0	320	1	320	
Kitchenette	0	300	1	300	
Bathroom	0	100	1	100	
	1	**1,420**	**4**	**1,420**	**1,420**

Itinerate Staff (Not JAS Staff) Room Name	Teaching Stations	Unit S.F.	No. of Rooms	Total S.F.	
Reception/ Waiting Area	0	200	1	200	
Conference Room	0	300	1	300	
Faculty Staff Lounge	0	200	1	200	
Cubical Area	0	1,350	1	1,350	
	0	**2,050**	**4**	**2,050**	**2,460**

Partners for Success Parent Center (Not JAS Staff) Room Name	Teaching Stations	Unit S.F.	No. of Rooms	Total S.F.	
Parent Training Center	0	800	1	800	
Office	3	350	1	350	
Lavatory Facility	0	120	1	120	
Conference Room	0	400	1	400	
Storage	0	400	1	400	
	3	**2,070**	**5**	**2,070**	**2,484**

Athletic Fields/ Storage Areas Room Name	Teaching Stations	Unit S.F.	No. of Rooms	Total S.F.	
Hardtop Court	8,400			0	
Separate Outdoor Storage	600			0	
	0	**9,000**	**0**	**0**	**9,000**

Other General Building Considerations Room Name	Teaching Stations	Unit S.F.	No. of Rooms	Total S.F.	
Mechanical Pump Room for Pool	0	1,000	1	1,000	
Grounds	0	220	1	220	
General Storage Area	0	300	1	300	
Service Closet/ Equip. Storage	0	50	3	150	
Mechanical Area	0	1,200	1	1,200	
Locker/ Lavatory Area	0	80	1	80	
Lavatory	0	80	1	80	
	0	**2,930**	**9**	**3,030**	**3,030**

Grand Total Net Building Square Footage	97,236
Total Gross Allowable Square Footage	100,000
Circulation and “architect’s space” (35%)	34,033
Adjusted Total Allowable Square Footage	131,269
Total Square Footage (over)/under	(31,269)